ORANGECREST HILLS
TRACT 30718 PA 4A/4B

LMD PLANS
RIVERSIDE, CALIFORNIA

COMMUNITIES SOUTHWEST
181 OLD SPRINGS ROAD
ANAHEIM, CA 92808
(714) 279-6555

SHEET INDEX

CONSULTANT / TEAM

CIVIL ENGINEER:
MDS CONSULTING
17320 Redhill Avenue, Suite 350
Irvine, CA 92614
(949) 251-8821

REVISIONS

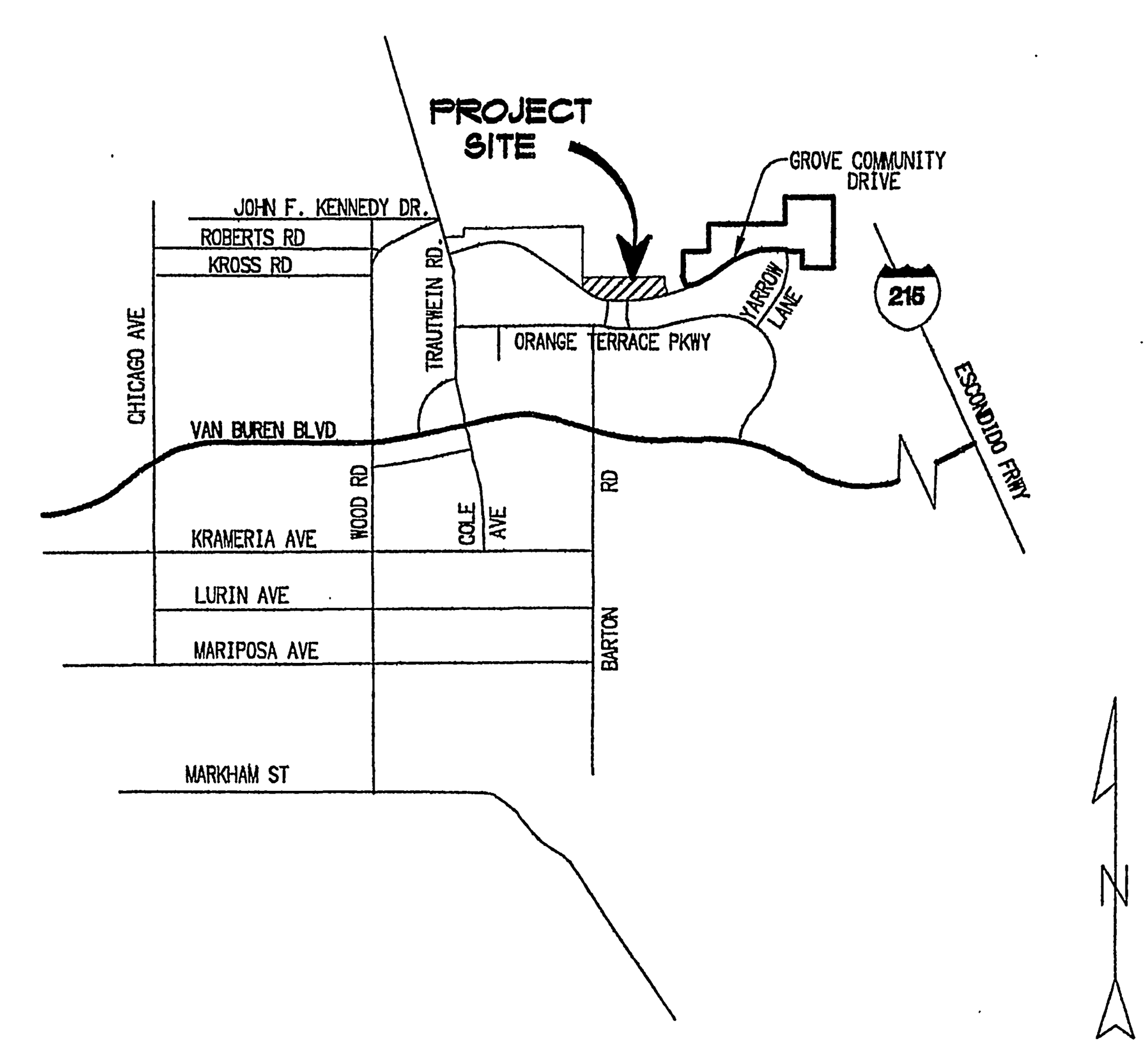
NO.	REVISION FOR	BY	DATE	APPROVED BY
△				

GENERAL NOTES FOR PUBLIC LANDSCAPES

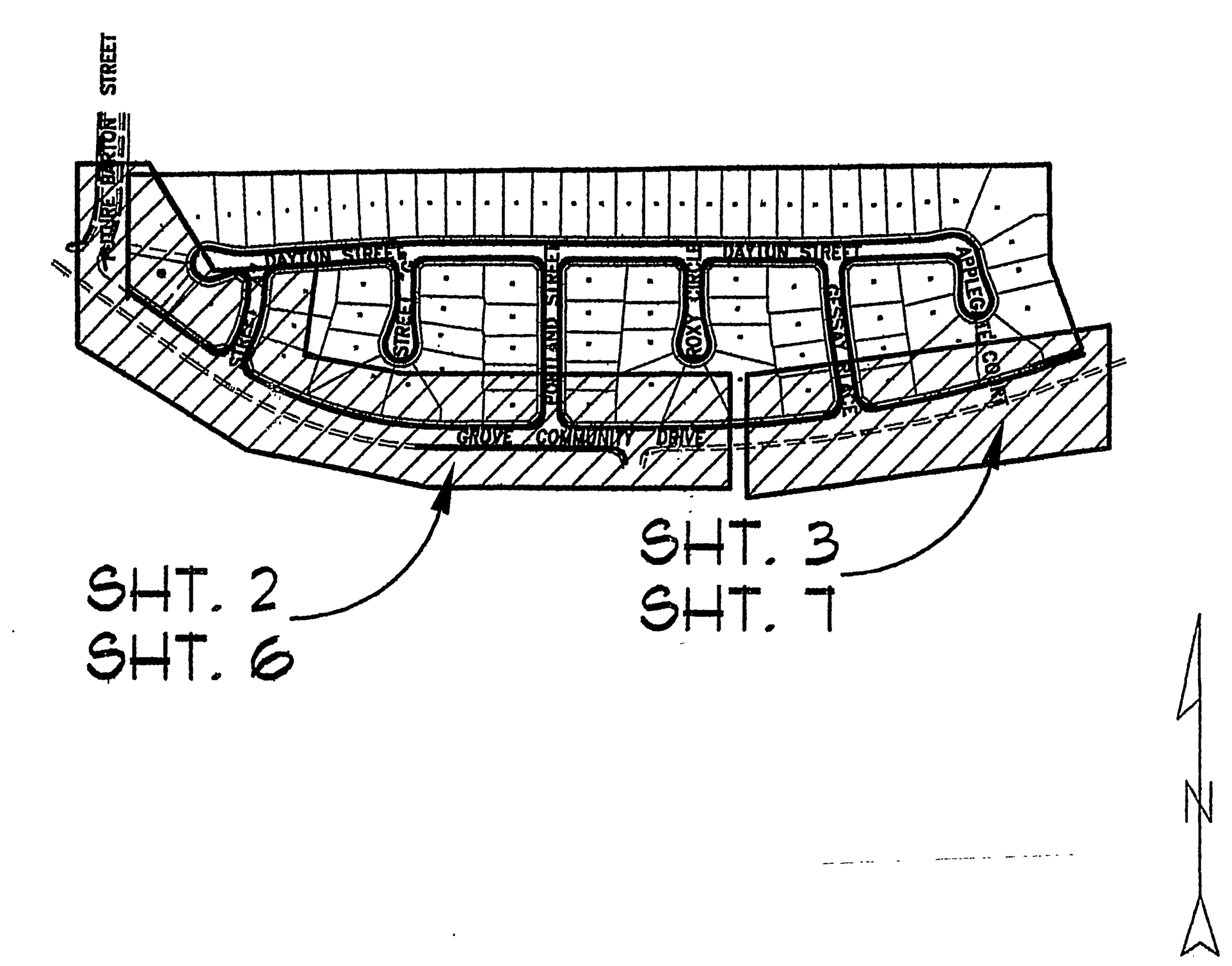
1. All related work shall conform to the City of Riverside Park and Recreation Department Standards and Specifications for Planting and Irrigation work. (Specifications section 02441 and 02480).
2. A "Public Landscape" permit, as issued by the Park and Recreation Department is required. Contact the Park Projects Inspector at (909) 351-6254 to schedule a pre-construction meeting and obtain the permit.
3. When calling for inspections contact the Park Projects Inspector a minimum of 48 hours in advance to schedule an inspection. A written approval will be provided on the Public Landscape Permit card for each stage of inspection. A verbal approval will not be acceptable.
4. Inspections are required per the standard specifications, and include but are not limited to the following:
a. After completion of final grading of the lots and when all utility services and sewer laterals have been marked, but prior to initiating any landscape work within the public right of way;
b. At time of installation of irrigation sleeves and constant pressure mainlines, but prior to backfill of trenches for same (Note: mainlines must be pressure tested in the presence of the Park Projects Inspector);
c. At time of installation of irrigation valves, laterals, and heads;
d. For spotting of all trees prior to digging planting pits;
e. While digging plant pits and planting/relocating trees;
f. After planting and all other indicated or specified work has been completed, for start of maintenance;
g. At substantial completion of the project for City's acceptance to start the required maintenance period;
h. At the end of the Maintenance Period, the Contractor/Developer shall call the Park Projects Inspector at the number listed above for a final acceptance inspection in order to be released from maintenance. Developers bonds will not be released until after receipt of written notification from the City that the project has passed final inspection and the Park and Recreation Department is assuming has received written notice from the HOA indicating their assumption of maintenance responsibilities.
5. The Developer shall be responsible to acceptably maintain all plantings for a minimum period of (1) year following start of maintenance, prior to turn-over to the HOA for ongoing maintenance.

*NOTE: In the interest of public safety and maintenance the Park Projects Inspector shall have the authority to revise the tree quantities and locations shown on approved plans based upon field conditions found at the time of installation of the trees.

VICINITY MAP



KEY MAP



RIVERSIDE PUBLIC UTILITIES – ELECTRIC
APPROVED BY: (signature)
DATE: 8·25·03
APPROVAL OF PROPOSED ELECTRIC ~~METER~~ SERVICE LOCATION.

WESTERN MUNICIPAL WATER DISTRICT
APPROVED BY: (signature)
DATE: August 26, 2003
APPROVAL OF PROPOSED WATER METER LOCATION, [redacted]

BENCHMARK:
CITY OF RIVERSIDE BENCHMARK ?.
?
?
?
ELEVATION = ?

CALL BEFORE YOU DIG
DIG ALERT
DIAL TOLL FREE
1-800-422-4133
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

(signature) PLANNING DEPT 10/3/03

(signature) 9.29.03

REGISTERED LANDSCAPE ARCHITECT — RANDOLPH HLUBIK NO. 1512 — Signature — 7/31/05 Renewal Date — 8.28.03 Date — STATE OF CALIFORNIA

RHA LANDSCAPE ARCHITECTS PLANNERS, INC.
3612 MISSION INN AVE
RIVERSIDE, CALIFORNIA
92501
(909) 781-1930
LIC. #1512
FAX (909) 686-8091
JOB #03105
CONTACT: CAMILO ARELLANO

MARK	REVISIONS	APPR.	DATE
△			

DESIGNED BY CA DRAWN BY DB CHECKED BY ____

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER	PH	10/6/03
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT	(initials)	10/06/03

APPROVED BY (signature)
PUBLIC WORKS DIRECTOR
DATE 10/8/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
TITLE SHEET
HORIZ. SCALE: NTS VERT. SCALE: NTS

ACCT. NO.
PLAN NO: **R-3071-L**
SHEET **1** OF **9**
DRAWING: 1

PRP03-0005 / PC-4389-R

INDEXED 10-15-03 LH

MAKE POINT OF CONNECTION IMMEDIATELY DOWNSTREAM OF 2" IRRIGATION WATER METER AND REDUCED PRESSURE BACKFLOW DEVICE INSTALLED BY LANDSCAPE CONTRACTOR. INSTALL THE FOLLOWING:
1) 2" REDUCED PRESSURE BACKFLOW DEVICE, FEBCO 825Y.
2) INSTALL IRRIGATION BOOSTER PUMP. FLOBOY FIXED SPEED BOOSTER PUMPING SYSTEM, MODEL (SFBF-S3F2A-21RONO/40)
3) 1-½" IRRIGATION MASTER VALVE, GRISWOLD 2250(E). CONNECT TO MASTER VALVE OUTPUT AT CONTROLLER. REFER TO IRRIGATION DETAILS FOR ADDITIONAL INFORMATION.
4) EXTEND PVC MAIN LINE TO VALVES AS SHOWN.
LOCATE ELECTRIC METER ENCLOSURE AT BACK OF CURB. INSTALL PER CITY OF RIVERSIDE DETAILS AND SPECIFICATIONS.
IRRIGATION / ELECTRIC METER SIZE: 100 AMP-120/240 VOLT-3 WIRE
IRRIGATION / ELECTRIC METER ADDRESS: 8449 MAPLE LANE, RIVERSIDE, CA 92508
WATER METER SIZE: 2"

IRRIGATION LEGEND

SYMBOL	MANUFACTURER/MODEL *	NOZZLE	RAD.	PSI	FLOW (GPM) Q	H	F	Van	DETAIL	NOTES
SHRUB HI-POP SPRAY HEADS										
	RAINBIRD 1812-SAM-PRS-5	Q/H/F/VAN	5'	25	.10	.20	.41	.37/.60/1.20	'E.H'/4 of 9	(1)
	RAINBIRD 1812-SAM-PRS-8	Q/H/F/VAN	8'	25	.26	.52	1.05	.72/1.19/1.7	'E.H'/4 of 9	(1)
	RAINBIRD 1812-SAM-PRS-10	Q/H/F/VAN	10'	25	.39	.79	1.58	.75/1.45/2.6	'E.H'/4 of 9	(1)
	RAINBIRD 1812-SAM-PRS-12	Q/H/F/VAN	12'	25	.65	1.3	2.6	.65/1.30/2.6	'E.H'/4 of 9	(1)
	RAINBIRD 1812-SAM-PRS-15	Q/H/F/VAN	15'	25	.92	1.85	3.7	.92/1.85/3.7	'E.H'/4 of 9	(1)

ALL IRRIGATION HEADS TO BE INSTALLED PER RIVERSIDE CITY STANDARD DETAIL #4040

EQUIPMENT LEGEND

SYMBOL	MANUFACTURER/MODEL *	SIZE	DETAIL	NOTES
M	IRRIGATION WATER METER - BY WMWD	2"	PER WMWD	-
	NIBCO T585 BALL VALVE	LINE SIZE	'D'/4 of 9	(2, 3)
A	IRRITROL MC+ CONTROLLER - 30 STATION CONTROLLER INSTALLED IN STAINLESS STEEL ENCLOSURE PROVIDED BY UNITED GREEN TECH (800) 427-0779. MODEL-CA2-IRI-30. PROVIDE METERED ELECTRICAL SERVICE COORDINATED WITH CONTROLLER LOCATION, AND APPROVED BY PUBLIC UTILITIES ELECTRIC.	30 STA.	'A'/4 of 9	(2, 4)
	GRISWOLD 2250 MASTER ELECTRIC CONTROL VALVE	1½"	'G'/4 of 9	(2, 3)
	RAINBIRD PESB-PRS-D SERIES ELECTRIC CONTROL VALVE	PER PLAN	'G'/4 of 9	(2, 3)
	FEBCO 825Y REDUCED PRESSURE BACKFLOW DEVICE	2"	'A'/2 of 9	(2, 3)
	RAINBIRD QUICKCOUPLER '44LRC'	1"	'F'/4 of 9	(2,3)
PUMP	FLOWTRONEX PUMP MODEL * SFBF-S3XXA-XXXXX0	SEE DETAIL & SPECIFICAITON	'J'/4 of 9 'I'/4 of 9	
	2" CLASS 315 PVC MAINLINE - 18" MIN. 24" MAX. COVER	2"	'C'/4 of 9	(2,3)
	CL 200 PVC NON-PRESSURE LATERAL LINE - 12" MIN. TO 16" MAX. COVER	PLAN SIZE	'C'/4 of 9	(2, 3)
	SCH 40 PVC IRRIGATION PIPE / WIRE SLEEVE - 24" MIN. COVER	SEE CHART	-	
NOT SHOWN	UF RATED CONTROL WIRE, 12 GA COMMON, 14 GA PILOT - 18" MIN. COVER	12/14 GA	-	
S	6" ROUND VALVE BOX WITH (2) EXTRA CONTROL WIRES & (1) COMMON WIRE	-	-	

SEQ. # / FLOW (GPM) / VALVE SIZE

(1) ALL SPRINKLERS SHALL BE 12" POP-UP BODIES
(2) PIPES AND VALVES ARE SHOWN IN HARDSCAPE FOR CLARITY ONLY.
(3) ALL MAINLINE TEES AND 90'S ARE TO BE SCH 40 PVC.
(4) COORDINATE ELEC. POINT OF CONNECTION WITH RIVERSIDE CITY UTILITIES-ELECTRIC FOR METERED SERVICE LOCATION.
NOTE: ALL VALVE BOX COVERS TO BE CARSON/BROOKS GREEN VALVE BOXES OR EQUAL.

AUTOMATIC IRRIGATION CONTROLLER, (IRRITROL MC+) TO BE INSTALLED INSIDE STAINLESS STEEL ENCLOSURE. SEE DETAIL 'A' SHEET 4 of 9.
COORDINATE WITH THE CITY OF RIVERSIDE PUBLIC UTILITIES FOR METERED ELECTRICAL SERVICE.

IRRIGATION LEGEND

SYMBOL	MANUFACTURER/MODEL *	NOZZLE	RAD.	PSI	FLOW (GPM) Q	H	F	DETAIL	NOTES
SHRUB HI-POP SPRAY HEADS									
	RAINBIRD T-12SAM-PC T22-1.0	T22-1.0	21'	25	.90			'E.H'/4 of 9	(1)
	RAINBIRD T-12SAM-PC T22-2.0	T22-2.0	21'	25		1.9		'E.H'/4 of 9	(1)
	RAINBIRD T-12SAM-FC T22-4.0	T22-4.0	19'	25			3.4	'E.H'/4 of 9	(1)

ALL IRRIGATION HEADS TO BE INSTALLED PER RIVERSIDE CITY STANDARD DETAIL #4040

FUTURE BARTON ROAD IMPROVEMENTS

SCH 40 PVC SLEEVING CHART

1 1/4" SLEEVE	1-4 WIRES	1/2" PIPE
1 1/2" SLEEVE	5-10 WIRES	3/4" PIPE
2" SLEEVE	11-20 WIRES	1" PIPE
2 1/2" SLEEVE	21-30 WIRES	1 1/4" PIPE
3" SLEEVE	31-40 WIRES	1 1/2" PIPE
4" SLEEVE	41-60 WIRES	2" PIPE
6" SLEEVE	61-99 WIRES	2 1/2"/3" PIPE
8" SLEEVE	100+ WIRES	4" PIPE
10" SLEEVE	N/A	6" PIPE

WATER METER INFORMATION
WMWD POTABLE WATER METER
METER ADDRESS:
METER NUMBER:
CONTRACTOR SHALL PROVIDE ABOVE INFORMATION ON AS-BUILT DRAWINGS.

IRRIGATION INFORMATION
WMWD POTABLE WATER METER
APPROX. STATIC PRESSUE AT METER: PSI
MAXIMUM DEMAND: GPM
CONTRACTOR SHALL PROVIDE ABOVE INFORMATION ON AS-BUILT DRAWINGS.

BALL VALVE (TYP.)
LE MUER ENCLOSURE & FOOTING SIZE AND LOCKING HARDWARE PER MFG. REQUIREMENTS MODEL #LBF-99
BACKFLOW PREVENTER
BRASS ELBOW
BRASS PIPE TYP.
FINISH GRADE
12" DEPTH MIN. PEA GRAVEL
12" MIN
4" MIN
BRASS NIPPLE (TYP.)
"Y" STRAINER 40 - MESH S.S.
BRASS ELBOW
BRASS UNION
FOOTING
PRESSURE SUPPLY LINE - INTAKE
12" MIN. SQ. CONCRETE THRUST BLOCK (TYP.)
BRASS ELBOW
PRESSURE SUPPLY LINE - DISCHARGE
12" BRASS NIPPLE PVC SCH 40 MALE ADAPTER (TYP.)

NOTE:
1. EQUIPMENT TO BE INSTALLED AT A MINIMUM OF 12" FROM WALLS INSTALL IN PLANTING AREA.
2. ALL ABOVE GROUND ASSEMBLY SHALL RECEIVE ONE (1) COAT RED LEAD PRIMER AND ONE (1) COAT PAINT
3. WHEN UNIT IS NEXT TO WALL, TEST COCKS TO BE ON OUTSIDE.
4. PAINT DARK GREEN (PER L.A. AT TIME OF INSTALLATION)
5. VERTICAL BRASS RISERS AND UNION MAY BE CHANGED TO GALV. / SCH 40 PIPE WITH WRITTEN PERMISSION OF WATER PERVEYOR.

A | BACKFLOW DEVICE — N.T.S.

THIS SHEET

FUTURE BARTON STREET
DAYTON STREET
LUCIA CT
PORTLAND STREET
ROXY CIRCLE
CISSY PLACE
APPLEGATE COURT
GROVE COMMUNITY DRIVE

BENCHMARK:
CITY OF RIVERSIDE BENCHMARK ?.
?
?
?
ELEVATION = ?

DIG ALERT
DIAL TOLL FREE
1-800-422-4133
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

10/3/08.

REGISTERED LANDSCAPE ARCHITECT — RANDOLPH HLUBIK NO. 1512 — Signature — 7/31/05 Renewal Date — 9.29.03 Date — STATE OF CALIFORNIA

RHA LANDSCAPE ARCHITECTS PLANNERS, INC.
3612 MISSION INN AVE
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(909) 781-1930
LIC. #1512
FAX (909) 686-8091
JOB #03105
CONTACT: CAMILO ARELLANO

MARK	REVISIONS	APPR.	DATE

DESIGNED BY CA DRAWN BY DB CHECKED BY

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER	PH	10/6/03
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT	BS.	10/06/03

APPROVED BY [signature]
PUBLIC WORKS DIRECTOR
DATE 10/8/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
IRRIGATION PLAN

HORIZ. SCALE: 1" = 30' VERT. SCALE: 1" = 30'

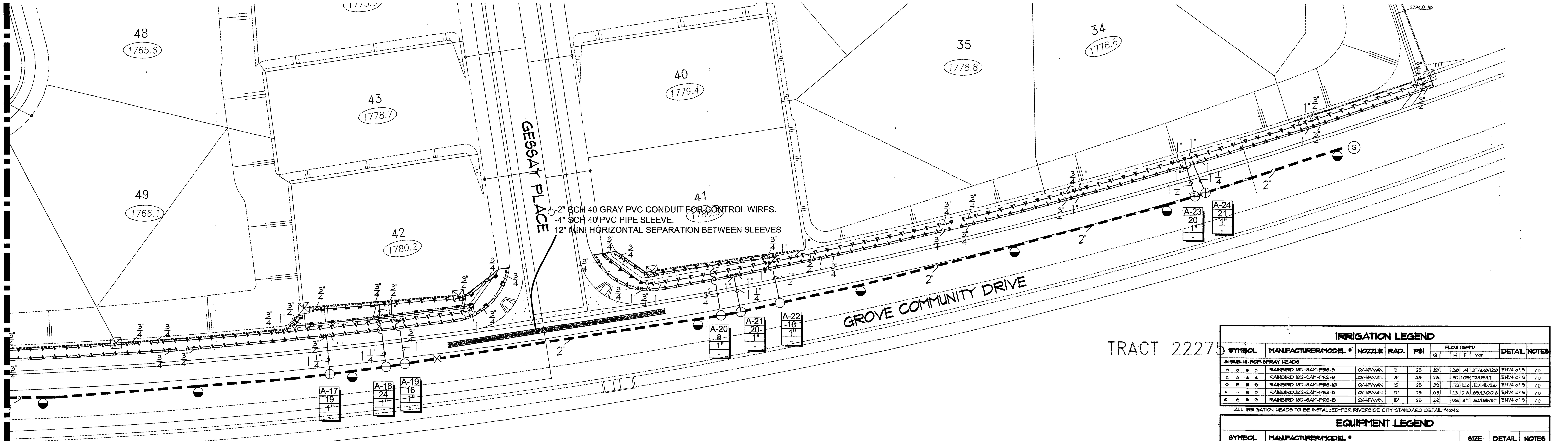
ACCT. NO.
PLAN NO: R-3071-L
SHEET 2 OF 9
DRAWING: 2

09-08-03 PRJ:\03prj\03105\Tract 30718\AutoCad\03105.dwg

INDEXED 10-15-03 4H

PRP03-0005 / PC-4389-R

[One Inch on Original Sheet] Drawing File: N: \Projects\03prj\03105 CSW.RivTr30717.30718 \Tract 30718\AutoCAD\RHA dwgs\CD's\30718 LMD\ 03105-30718 LMDirr Sep 05, 2003 - 3:36pm



							SUMMER (Jun., Jul., and Aug.)		
Project Name:		OrangeCrest Tract 30718					Water meter Number:		1
Designer Name:		DB					Reclaimed / Potable:		P
Date Prepared:		37868							
Evapotranspiration Rates:			Plant Factors (% of ETo):				Irrigation Efficiency (%):		
Historical:	55.45	In. / Yr.			Turf:	0.8		Stream Rotors:	0.75
Seasonal:	22.08	In.			Low Water Use Shrubs:	0.3		Spray Heads:	0.65
Seasonal:	1.70	In. / Wk.			Medium Water Use Shrubs:	0.4		Bubbler Heads:	0.85
					High Water Use Shrubs:	0.5		Drip Systems:	0.90
Controller Letter:		A							
VALVE NUMBER	FLOW IN GPM	PLANT FACTOR	PRECIP. RATE	IRRIG. EFFIC.	MAX. MIN./CYCLE	IR/WK INCHES	IR/WK MINUTES	CYCLES PER WK	GALLONS PER WK
1	18	0.6	1.60	0.65	4	1.57	59	16	1,058
2	16	0.6	1.60	0.65	4	1.57	59	16	941
3	27	0.6	1.60	0.65	4	1.57	59	16	1,587
4	15	0.6	1.60	0.65	4	1.57	59	16	882
5	29	0.6	1.60	0.65	4	1.57	59	16	1,705
6	29	0.6	1.60	0.65	4	1.57	59	16	1,705
7	29	0.6	1.60	0.65	4	1.57	59	16	1,705
8	19	0.6	1.60	0.65	4	1.57	59	16	1,117
9	19	0.6	1.60	0.65	4	1.57	59	16	1,117
10	21	0.6	1.60	0.65	4	1.57	59	16	1,235
11	11	0.6	1.60	0.65	4	1.57	59	16	647
12	22	0.6	1.60	0.65	4	1.57	59	16	1,293
13	20	0.6	1.60	0.65	4	1.57	59	16	1,176
14	16	0.6	1.60	0.65	4	1.57	59	16	941
15	15	0.6	1.60	0.65	4	1.57	59	16	882
16	17	0.6	1.60	0.65	4	1.57	59	16	999
17	19	0.6	1.60	0.65	4	1.57	59	16	1,117
18	24	0.6	1.60	0.65	4	1.57	59	16	1,411
19	16	0.6	1.60	0.65	4	1.57	59	16	941
20	8	0.6	1.60	0.65	4	1.57	59	16	470
21	20	0.6	1.60	0.65	4	1.57	59	16	1,176
22	18	0.6	1.60	0.65	4	1.57	59	16	1,058
23	20	0.6	1.60	0.65	4	1.57	59	16	1,176
24	21	0.6	1.60	0.65	4	1.57	59	16	1,235
25	29	0.6	1.60	0.65	4	1.57	59	16	1,705
26	29	0.6	1.60	0.65	4	1.57	59	16	1,705
27	24	0.6	1.60	0.65	4	1.57	59	16	1,411
Run Time Totals:			Water Use Totals:					Water Cost Totals:	
1,587	Min. / Wk.		32,395	Gal. / Wk.	0.10	Acft / Wk.		$630.00	Cost / Acft.
26.46	Hrs. / Wk.		140,270	Gal. / Mo.	0.43	Acft / Mo.		$271.22	Cost / Mo.
5	Days / Wk.		421,134	Gal. / Ssn.	1.29	Acft / Ssn.		$814.27	Cost / Ssn.
5.29	Hrs. / Day		6,479	Gal. / Day	0.02	Acft / Day		$2,044.90	Cost / Yr.

PRESSURE LOSS CALCULATIONS (VALVE 24 @ 21 GPM)	
LOSS THRU 1" WATER METER (EL. 1736')	Ø PSI
LOSS THRU 1" B/F DEVICE	12.Ø PSI
LOSS THRU 2ØØØ' OF 2" MAIN	8.4 PSI
LOSS THRU GATE VALVES	2.Ø PSI
LOSS THRU 1" VALVE	3.Ø PSI
LOSS THRU LATERAL LINES	3.1 PSI
ELEVATION LOSS +4Ø (EL. 178Ø')	17.3 PSI
MISC. LOSS THRU FITTINGS	2.85 PSI
TOTAL SYSTEM LOSSES	48.6 PSI
PRESSURE REQUIRED AT HEAD	3Ø PSI
STATIC PRESSURE	71 PSI
PUMP BOOST	44 PSI
RESIDUAL PRESSURE	37 PSI

PRESSURE LOSS CALCULATIONS (VALVE 7 @ 29 GPM)	
LOSS THRU 2" WATER METER (EL. 1736')	Ø PSI
LOSS THRU 2" B/F DEVICE	12.Ø PSI
LOSS THRU 35Ø' OF 2" MAIN	2.6 PSI
LOSS THRU GATE VALVES	2.Ø PSI
LOSS THRU 1½" VALVE	3.6 PSI
LOSS THRU LATERAL LINES	2.8 PSI
ELEVATION LOSS +15 (EL. 1751')	6.5 PSI
MISC. LOSS THRU FITTINGS	2.3 PSI
TOTAL SYSTEM LOSSES	31.8 PSI
PRESSURE REQUIRED AT HEAD	3Ø PSI
STATIC PRESSURE	71 PSI
PUMP BOOST	44 PSI
RESIDUAL PRESSURE	53.2 PSI

PRESSURE LOSS CALCULATIONS (VALVE 2Ø @ 8 GPM)	
LOSS THRU 2" WATER METER (EL. 1736')	Ø PSI
LOSS THRU 2" B/F DEVICE	12.Ø PSI
LOSS THRU 17ØØ' OF 2" MAIN	5.95 PSI
LOSS THRU GATE VALVES	2.Ø PSI
LOSS THRU 1" VALVE	1.5 PSI
LOSS THRU LATERAL LINES	1.8 PSI
ELEVATION LOSS +44 (EL. 178Ø')	19 PSI
MISC. LOSS THRU FITTINGS	2.32 PSI
TOTAL SYSTEM LOSSES	44.57 PSI
PRESSURE REQUIRED AT HEAD	3Ø PSI
STATIC PRESSURE	71 PSI
PUMP BOOST	44 PSI
RESIDUAL PRESSURE	40.4 PSI

1. GENERAL - ALL WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE CITY CODES AND STANDARDS, AND THESE PLANS.
   A. THE CONTRACTOR SHALL CAREFULLY REVIEW THE SITE AND VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH ANY WORK UNDER THIS CONTRACT.
   B. THE CONTRACTOR SHALL CARRY ALL WORKERS PUBLIC LIABILITY, AND PROPERTY DAMAGE INSURANCE AS REQUIRED BY OWNER.
   C. A PUBLIC LANDSCAPE PERMIT AS ISSUED BY THE CITY PARK AND RECREATION DEPARTMENT IS REQUIRED. THE CONTRACTOR SHALL APPLY FOR ALL PERMITS AND PAY FOR SAME.
2. SCOPE OF WORK - UNLESS OTHERWISE SPECIFIED, THE CONSTRUCTION OF IRRIGATION SYSTEMS SHALL INCLUDE THE FURNISHING, INSTALLING TESTING OF ALL MAIN LINE, POINT OF CONNECTION, LATERAL LINE, RISERS AND FITTINGS± AND THE FURNISHING AND INSTALLING OF SPRINKLER HEADS, AUTOMATIC CONTROLLER, CONTROL WIRES (TO VALVES), ELECTRICAL CONTROL VALVES, BACKFLOW PROTECTION, EXCAVATION AND BACK FILL AND ALL OTHER WORK IN ACCORDANCE WITH THESE PLANS, DETAILS AND NOTES.

   THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, PROPERTY, TRANSPORTATION AND PERFORM ALL OPERATIONS REQUIRED FOR A COMPLETE AND OPERABLE IRRIGATION SYSTEM AS INDICATED ON, OR REASONABLY IMPLIED BY THE DRAWINGS AND/OR NOTES, INCLUDE AS A PART OF THE IRRIGATION WORK, BUT NOT LIMITED BY IT, ARE THE FOLLOWING ITEMS:

   A. INSTALL COMPLETE OPERABLE INDEPENDENT, AUTOMATIC, IRRIGATION SYSTEMS PER THE PLANS, DETAILS, LEGEND AND NOTES.
   B. ALL IRRIGATION WORK SHALL BE GUARANTEED BY THE CONTRACTOR AS TO MATERIALS AND WORKMANSHIP, INCLUDING SETTLING OF BACK FILLED TRENCHES BELOW GRADE FOR A PERIOD OF ONE YEAR FOLLOWING THE DATE OF FINAL ACCEPTANCE OF THE WORK.
3. THE LANDSCAPE ARCHITECT SHALL DECIDE ALL QUESTIONS RELATING TO INTERPRETATION OF THE DRAWINGS AND THE ACCEPTABLE FULFILLMENT OF THE CONTRACT.
4. PIPING SHOWN ON THE PLANS IS ESSENTIALLY DIAGRAMMATIC. CONTRACTOR SHALL ROUTE PIPING TO AVOID CONFLICT WITH STATIONARY ELEMENTS AND IN SUCH A MANNER AS TO CONFORM WITH THE VARIOUS DETAILS.
5. THE CONTRACTOR SHALL AT ALL TIMES PROTECT HIS WORK FROM DAMAGE AND THEFT AND REPLACE ALL DAMAGED OR STOLEN PARTS AT HIS EXPENSE UNTIL THE WORK IS ACCEPTED IN WRITING BY THE OWNER.
6. EXTREME CARE SHALL BE EXERCISED IN EXCAVATING AND WORKING NEAR EXISTING UTILITIES. CONTRACTOR SHALL VERIFY THE LOCATION AND CONDITION OF ALL UTILITIES AND BE RESPONSIBLE FOR ANY DAMAGE. UTILITIES PLANS MAY BE OBTAINED FROM OWNER.
7. THE CONTRACTOR SHALL KEEP THE PREMISES CLEAN AND FREE OF EXCESS EQUIPMENT, MATERIALS AND RUBBISH INCIDENTAL TO HIS WORK.
8. IRRIGATION DESIGN IS BASED ON 69 PSI AVAILABLE WATER PRESSURE AT 3Ø GPM. CONTRACTOR SHALL VERIFY PRESSURE PRIOR TO CONSTRUCTION SHOULD A DISCREPANCY EXIST, NOTIFY THE LANDSCAPE ARCHITECT PRIOR TO BEGINNING CONSTRUCTION.
9. CONTRACTOR SHALL MAKE POINT OF CONNECTION (P.O.C.) PER PLAN
1Ø. IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING METERED ELECTRICAL SERVICE FOR THE IRRIGATION CONTROLLER AND CONNECTING 12Ø VOLT SERVICE TO THE CONTROLLER. ALL COMPONENTS SHALL BE INSTALLED PER CITY STANDARDS.
11. ALL CONTROL WIRE SHALL BE SOLID COPPER, PLASTIC INSULATED, UF DIRECT BURIAL WIRE. ALL COMMON WIRE SHALL BE AWG #12 WHITE± ALL PILOT WIRE SHALL BE AWG #14, RED OR BLACK.
12. ALL CONTROL WIRE AND IRRIGATION LINE RUNS UNDER PAVING SHALL BE ENCASED IN SCH. 4Ø PVC PIPE SLEEVES.
13. FINAL LOCATION OF CONTROL VALVES SHALL BE SUBJECT TO THE FIELD REVIEW AND APPROVAL OF BOTH THE PARKS PROJECTS INSPECTOR AND THE LANDSCAPE ARCHITECT.
14. ALL BRASS OR GALVANIZED CONNECTIONS SHALL BE COATED WITH TEFLON TAPE OR LED-LUBE JOINT COMPOUND (OR EQUAL). ALL PVC THREADED CONNECTIONS SHALL BE COATED WITH TEFLON TAPE.
15. ALL PVC SOLVENT-WELD CONNECTIONS SHALL BE MADE WITH SOLVENT-WELD MATERIALS AS RECOMMENDED BY THE PIPE MANUFACTURER. SOLVENT-WELD PRIMER SHALL BE APPLIED AT ALL CONNECTIONS.
16. UPON COMPLETION OF THE PROJECT, CONTRACTOR TO TURN OVER TO OWNER:
   A. A REPRODUCIBLE SET OF RECORD DRAWINGS AND CONTROLLER CHART. PROVIDE A DUPLICATE SET FOR CITY RECORDS AND TURN OVER TO THE PARK PROJECTS INSPECTOR AT FINAL ACCEPTENACE INSPECTION.
   B. 2 KEYS FOR EACH CONTROLLER.
   C. 2 QUICK COUPLER KEYS AND MATCHING HOSE SWIVELS.
   D. 2 OF EACH SPRINKLER HEAD SPECIFIED.
17. RECORD DRAWINGS - THE CONTRACTOR SHALL PROVIDE AND KEEP UP TO DATE A COMPLETE RECORD SET OF PRINTS WHICH SHALL BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE ORIGINAL DRAWINGS. PRIOR TO FINAL REVIEW, THE CONTRACTOR SHALL TRANSCRIBE ALL INFORMATION FROM THE RECORD SET TO A REPRODUCIBLE PHOTO MYLAR, OBTAINED FROM THE LANDSCAPE ARCHITECT. ALL WORK SHALL BE NEAT AND LEGIBLE, LOCATING THE FOLLOWING ITEMS FROM PERMANENT POINTS OF REFERENCE: BALL VALVES, MAIN LINE AND CONTROL WIRE ROUTING, POC, CONTROL VALVES AND CONTROLLER, QUICK COUPLING VALVES, AND OTHER PERTINENT UNDERGROUND ITEMS.
18. CONTROLLER CHART - UPON REVIEW OF THE FINAL RECORD DRAWINGS, PROVIDE ONE CHART PER EACH CONTROLLER INSTALLED.
   A. THE CHART IS TO BE A REDUCED COPY OF THE REVIEWED RECORD SYSTEM (A BLACK LINE PRINT REDUCED TO THE MAXIMUM SIZE THE CONTROLLER DOOR WILL ALLOW, COLORED WITH A DIFFERENT COLOR FOR EACH VALVE STATION).
   B. WHEN COMPLETED, REVIEWED AND ACCEPTED BY THE PARKS PROJECTS INSPECTOR, THE CHART SHALL BE HERMATICALLY SEALED BETWEEN TWO (2) PIECES OF 2Ø MIL CLEAR PLASTIC AND MOUNTED ON THE INSIDE OF THE CONTROLLER DOOR USING VELCRO TAPE OR EQUAL.
19. CONTRACTOR SHALL ALSO REFER TO CITY OF RIVERSIDE STANDARD IRRIGATION SPECIFICATIONS SECTION Ø2441.

IRRIGATION LEGEND

SYMBOL	MANUFACTURER/MODEL *	NOZZLE	RAD.	PSI	FLOW (GPM) Q	H	F	Van	DETAIL	NOTES
SHRUB HI-POP SPRAY HEADS										
	RAINBIRD 1812-SAM-PRS-5	Q/H/F/VAN	5'	25	.1Ø	.2Ø	.41	.37/.6Ø/1.2Ø	'E,H'/4 of 9	(1)
	RAINBIRD 1812-SAM-PRS-8	Q/H/F/VAN	8'	25	.26	.52	1.Ø5	.72/1.19/1.7	'E,H'/4 of 9	(1)
	RAINBIRD 1812-SAM-PRS-1Ø	Q/H/F/VAN	1Ø'	25	.39	.79	1.58	.75/1.45/2.6	'E,H'/4 of 9	(1)
	RAINBIRD 1812-SAM-PRS-12	Q/H/F/VAN	12'	25	.65	1.3	2.6	.65/1.3Ø/2.6	'E,H'/4 of 9	(1)
	RAINBIRD 1812-SAM-PRS-15	Q/H/F/VAN	15'	25	.92	1.85	3.7	.92/1.85/3.7	'E,H'/4 of 9	(1)

ALL IRRIGATION HEADS TO BE INSTALLED PER RIVERSIDE CITY STANDARD DETAIL #4Ø4Ø

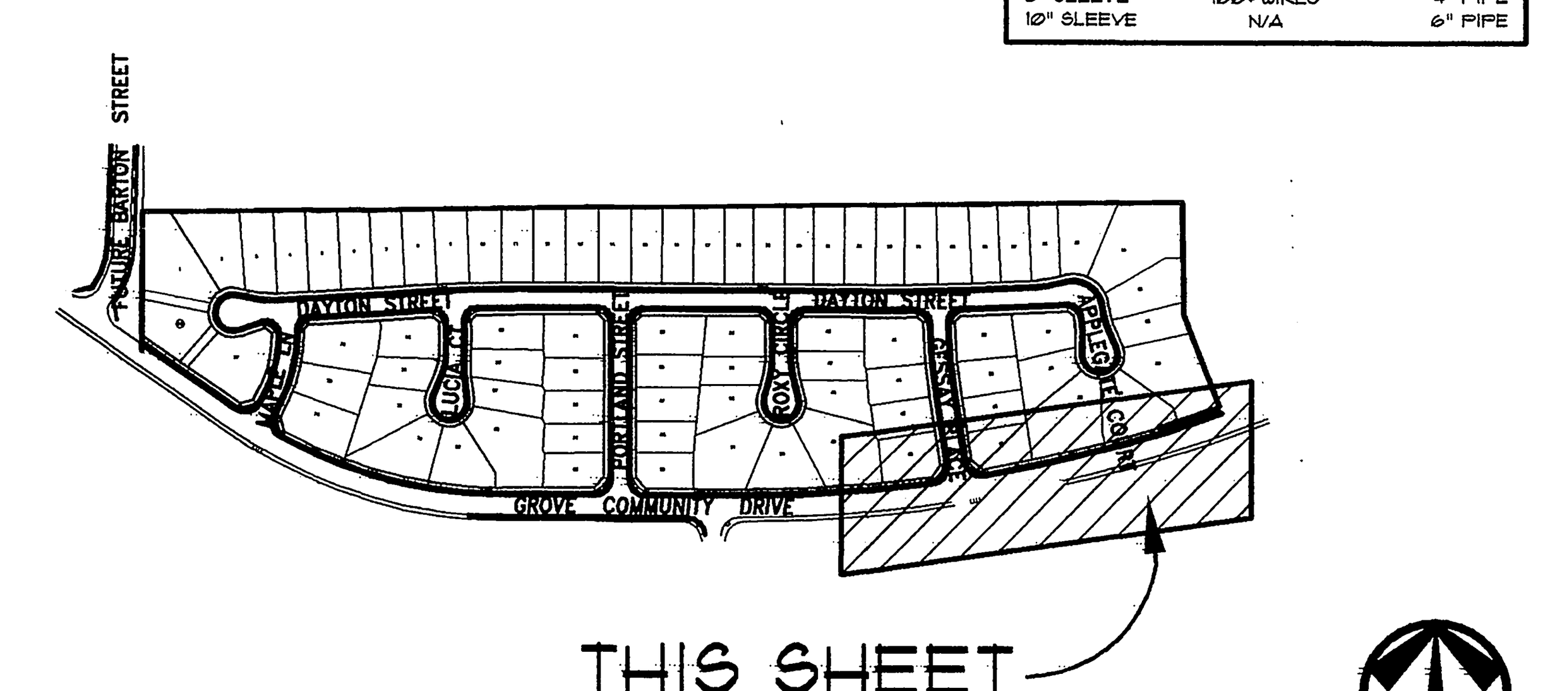
EQUIPMENT LEGEND

SYMBOL	MANUFACTURER/MODEL *	SIZE	DETAIL	NOTES
M	IRRIGATION WATER METER - BY WMWD	2"	PER WMWD	-
	NIBCO T585 BALL VALVE	LINE SIZE	'D'/4 of 9	(2, 3)
A	IRRITROL MC+ CONTROLLER - 3Ø STATION CONTROLLER INSTALLED IN STAINLESS STEEL ENCLOSURE PROVIDED BY UNITED GREEN TECH (8ØØ) 427-Ø779. MODEL-CA2-IRI-3Ø. PROVIDE METERED ELECTRICAL SERVICE COORDINATED WITH CONTROLLER LOCATION, AND APPROVED BY PUBLIC UTILITIES ELECTRIC.	3Ø STA.	'A'/4 of 9	(2, 4)
	GRISWOLD 225Ø MASTER ELECTRIC CONTROL VALVE	1½"	'G'/4 of 9	(2, 3)
	RAINBIRD PESB-PRS-D SERIES ELECTRIC CONTROL VALVE	PER PLAN	'G'/4 of 9	(2, 3)
	FEBCO 825Y REDUCED PRESSURE BACKFLOW DEVICE	2"	'A'/2 of 9	(2, 3)
	RAINBIRD QUICKCOUPLER '44LRC'	1"	'F'/4 of 9	(2,3)
PUMP	FLOWTRONEX PUMP MODEL * SFBF-S3XXA-XXXXXØ	SEE DETAIL & SPECIFICAITON	'J'/4 of 9 'I'/4 of 9	
	2" CLASS 315 PVC MAINLINE - 18" MIN. 24" MAX. COVER	2"	'C'/4 of 9	(2,3)
	CL 2ØØ PVC NON-PRESSURE LATERAL LINE - 12" MIN. TO 16" MAX. COVER	PLAN SIZE	'C'/4 of 9	(2, 3)
	SCH 4Ø PVC IRRIGATION PIPE / WIRE SLEEVE - 24" MIN. COVER	SEE CHART	-	
NOT SHOWN	UF RATED CONTROL WIRE, 12 GA COMMON, 14 GA PILOT - 18" MIN. COVER	12/14 GA	-	
S	6" ROUND VALVE BOX WITH (2) EXTRA CONTROL WIRES & (1) COMMON WIRE	-	-	
SEQ. # / FLOW (GPM) / VALVE SIZE	(1) ALL SPRINKLERS SHALL BE 12" POP-UP BODIES (2) PIPES AND VALVES ARE SHOWN IN HARDSCAPE FOR CLARITY ONLY. (3) ALL MAINLINE TEES AND 9Ø'S ARE TO BE SCH 4Ø PVC. (4) COORDINATE ELEC. POINT OF CONNECTION WITH RIVERSIDE CITY UTILITIES-ELECTRIC FOR METERED SERVICE LOCATION. NOTE: ALL VALVE BOX COVERS TO BE CARSON/BROOKS GREEN VALVE BOXES OR EQUAL.			

AUTOMATIC IRRIGATION CONTROLLER, (IRRITROL MC+) TO BE INSTALLED INSIDE STAINLESS STEEL ENCLOSURE. SEE DETAIL 'A' SHEET 4 of 9.
COORDINATE WITH THE CITY OF RIVERSIDE PUBLIC UTILITIES FOR METERED ELECTRICAL SERVICE.

SCH 4Ø PVC SLEEVING CHART

1 1/4" SLEEVE	1-4 WIRES	1/2" PIPE
1 1/2" SLEEVE	5-1Ø WIRES	3/4" PIPE
2" SLEEVE	11-2Ø WIRES	1" PIPE
2 1/2" SLEEVE	21-3Ø WIRES	1 1/4" PIPE
3" SLEEVE	31-4Ø WIRES	1 1/2" PIPE
4" SLEEVE	41-6Ø WIRES	2" PIPE
6" SLEEVE	61-99 WIRES	2 1/2"/3" PIPE
8" SLEEVE	1ØØ+ WIRES	4" PIPE
1Ø" SLEEVE	N/A	6" PIPE



Ø' 3Ø' 6Ø' 9Ø'

BENCHMARK:
CITY OF RIVERSIDE BENCHMARK ?.
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?
ELEVATION = ?

DIG ALERT
DIAL TOLL FREE
1-800-422-4133
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REGISTERED LANDSCAPE ARCHITECT — RANDOLPH HLUBIK NO. 1512 — Signature — 7/31/05 Renewal Date — 9.29.03 Date — STATE OF CALIFORNIA

RHA LANDSCAPE ARCHITECTS PLANNERS, INC.
3612 MISSION INN AVE
RIVERSIDE, CALIFORNIA
92501
(909) 781-1930
LIC. #1512
FAX (909) 686-8091
JOB #03105
CONTACT: CAMILO ARELLANO

MARK	REVISIONS	APPR.	DATE

DESIGNED BY CA DRAWN BY DB CHECKED BY

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER	PH	10/6/03
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT		10/06/03

APPROVED BY
PUBLIC WORKS DIRECTOR
DATE 10/8/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
IRRIGATION PLAN
HORIZ. SCALE: 1" = 30' VERT. SCALE: 1" = 30'

ACCT. NO.
PLAN NO: R-3071-L
SHEET 3 OF 9
DRAWING: 3

PRP03-0005 / PC-4389-R

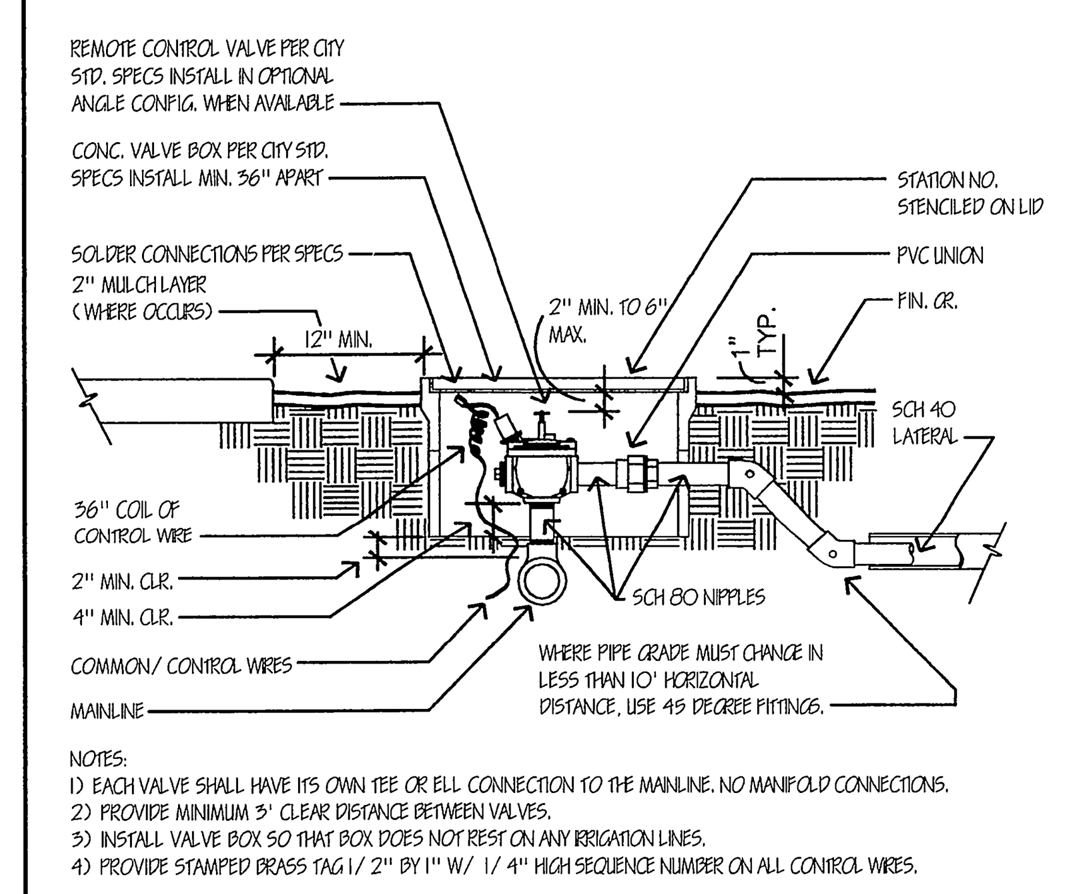
FloBoy Fixed Speed Booster Pumping System, Model(SFBF-S3F2A-20R0N0/40) rated for 30 GPM at 44 PSI Boost. Minimum suction pressure to be 50 PSI. Motor is 3 HP, 3600 RPM Full voltage, horizontal NEMA faced ODP. Pumps shall have cast iron casing, enclosed impeller and mechanical seal. Electrical power shall be 230 volts, 1 phase, 60 Hertz.

Standard Construction will include:
- o UL Listing of complete FloBoy pumping system.
- o Marine grade aluminum enclosure with plated piping.
- o Lockable access cover.
- o Flowtronex engineered ventilation fan system.
- o External 30 amp electrical fusible disconnect in NEMA 3R enclosure.
- o 3 in. Flanged suction and discharge connections.
- o 3 in. control valve with pressure reducing pilot and backcheck.
- o 2 5/8 in. silicone filled pressure gauges with isolation valve.
- o 3 in. station discharge isolation valve.
- o Factory run testing using actual suction pressure, discharge pressure and flow conditions.
- o U.L. listed NEMA 12 control/starter panel.
- o Suction pressure gauge.
- o Programmable microprocessor based industrial grade controller with operator interface device (OASIS).
- o S.L.A.P. U.L. category B & C surge & lightning arrestor with total power dissipation of 82,500,000 VA. maximum clamping voltage - 1,500 volts (200a Pulse,8*20 msec).
- o On/Off /Auto selector switches.
- o Low/High discharge pressure shutdown and alarm.
- o High pump temperature thermal sensor/safety.
- o Solid State overload/single phase /phase imbalance/low voltage protection.
- o 3 HP across the line starter.
- o 24 volt AC relay for starting and stopping.
- o 1 CD - FloBoy operation & maintenance manual
- o 1 Printed copy of theFloBoy operator & maintenance manual
- o 1 year limited warranty.

Additional Items:
o Startup Service (SFBZ-F000-000)
Flowtronex PSI, Inc.
Dallas, TX USA
800-786-7480

Shipment: Estimating 4 weeks after receipt of signed contract and drawing approval.
F.O.B. Dallas, Texas

I PUMP TECHNICAL INFORMATION

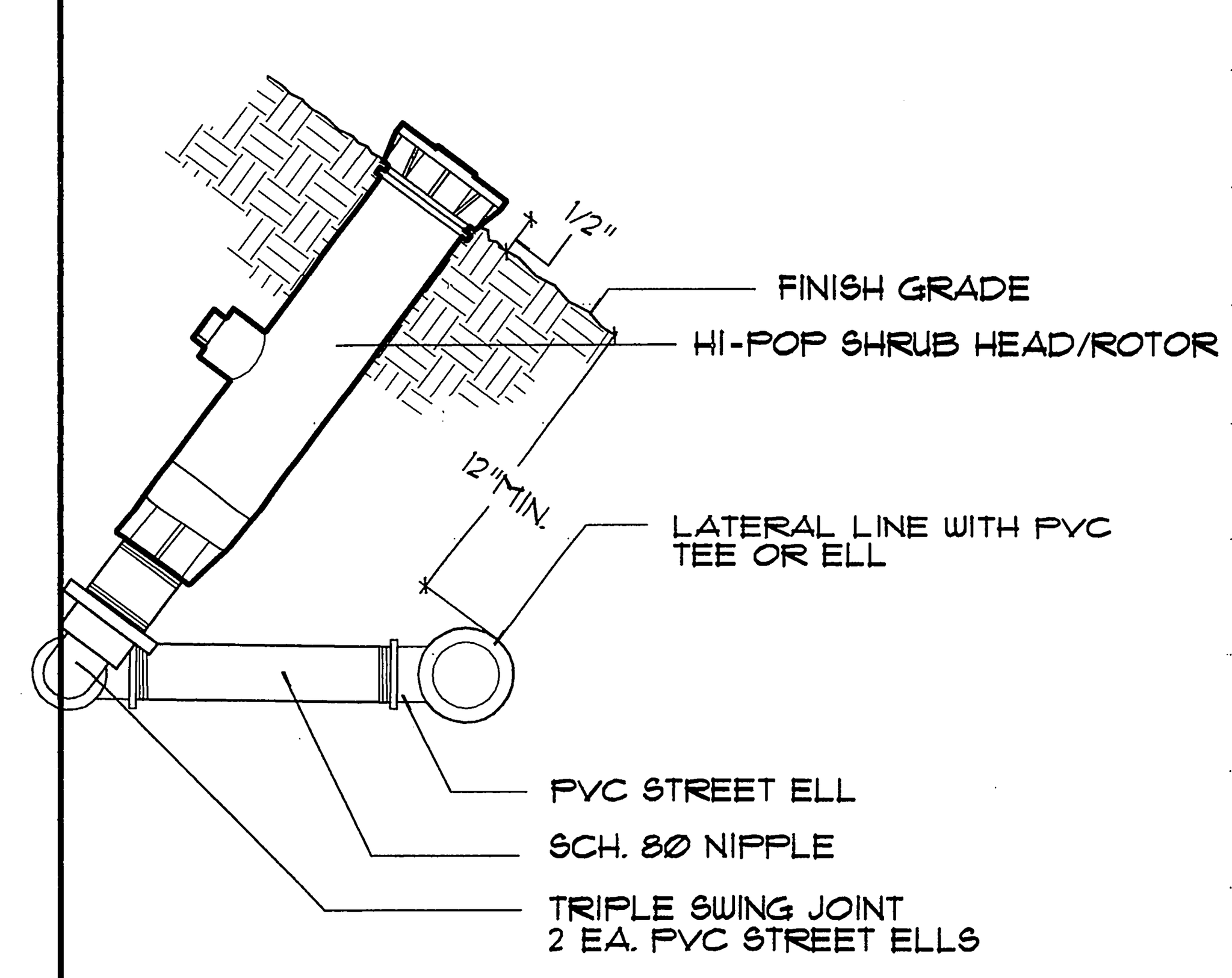


NOTES:
1) EACH VALVE SHALL HAVE ITS OWN TEE OR ELL CONNECTION TO THE MAINLINE. NO MANIFOLD CONNECTIONS.
2) PROVIDE MINIMUM 3' CLEAR DISTANCE BETWEEN VALVES.
3) INSTALL VALVE BOX SO THAT BOX DOES NOT REST ON ANY IRRIGATION LINES.
4) PROVIDE STAMPED BRASS TAG 1/ 2" BY 1" W/ 1/ 4" HIGH SEQUENCE NUMBER ON ALL CONTROL WIRES.

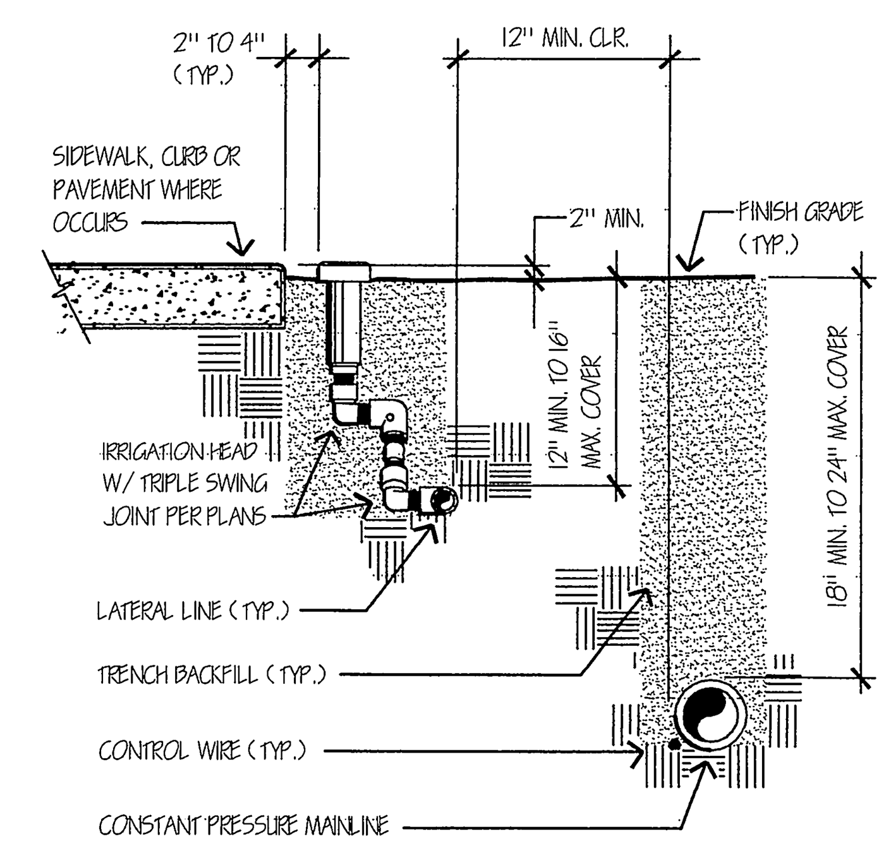
NOT TO SCALE

Approved BJ	Date 06/21/02	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
Revised	Date	REMOTE CONTROL VALVE	4030

G REMOTE CONTROL VALVE N.T.S.



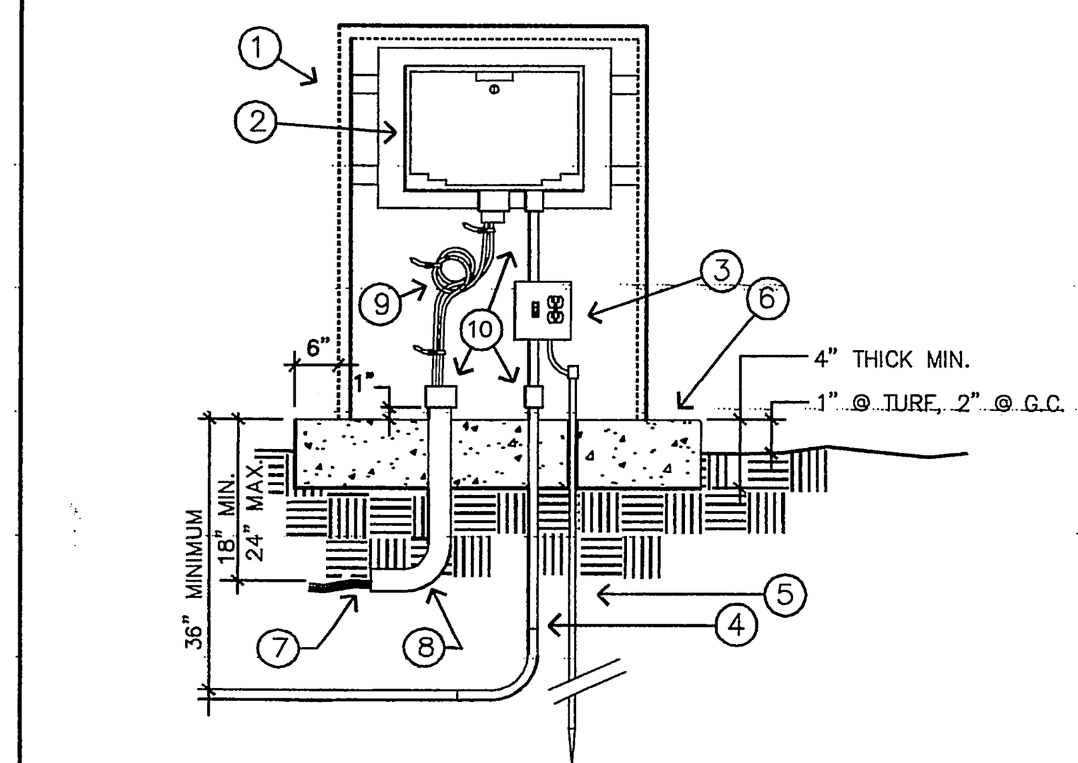
E SHRUB POP UP ON SLOPE N.T.S.



NOT TO SCALE

Approved BJ	Date 11/12/02	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
Revised	Date	TRENCH AND LINE PLACEMENT	4010

C TRENCH & LINE PLACEMENT N.T.S.

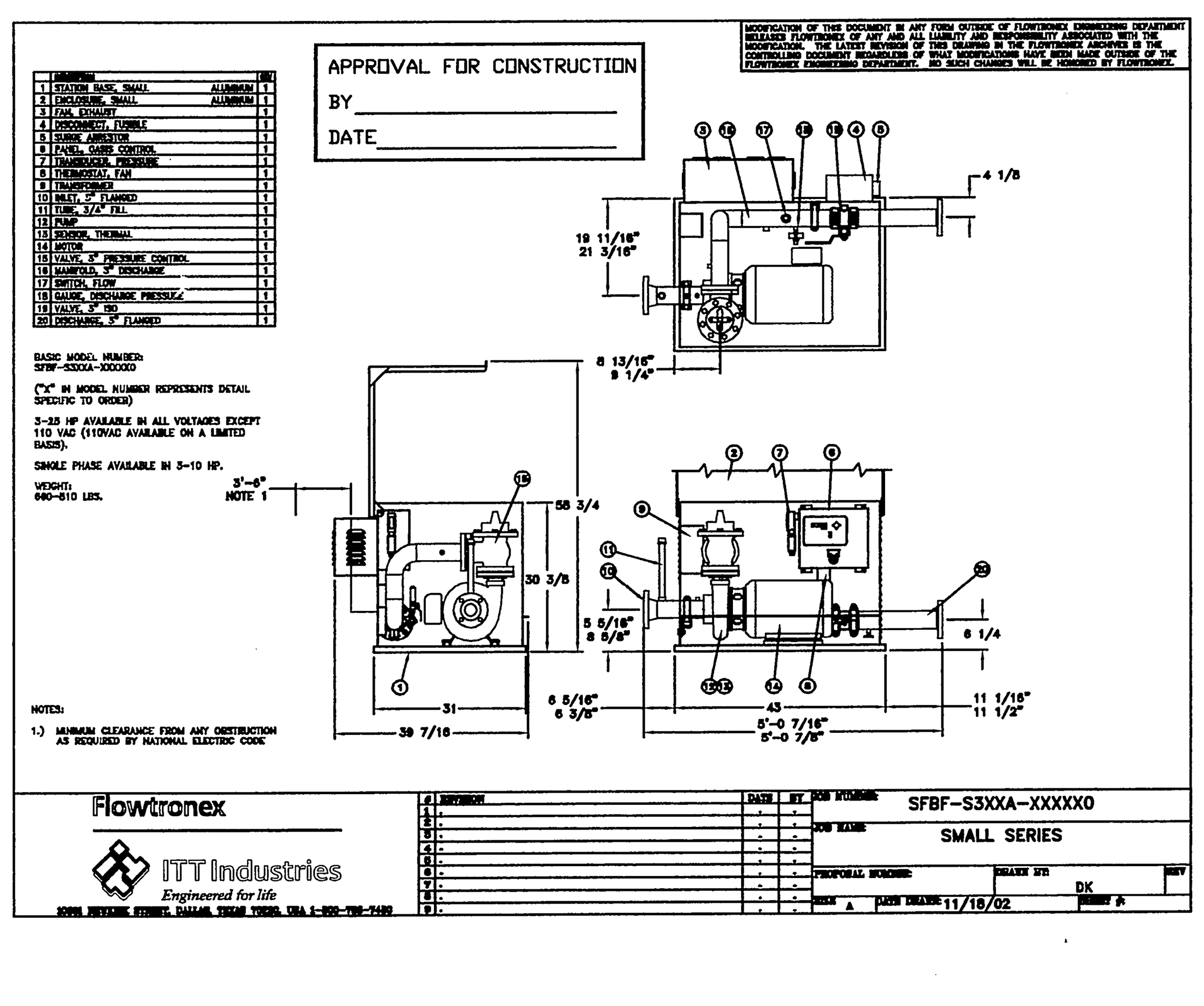


CONSTRUCTION NOTES: NOT TO SCALE

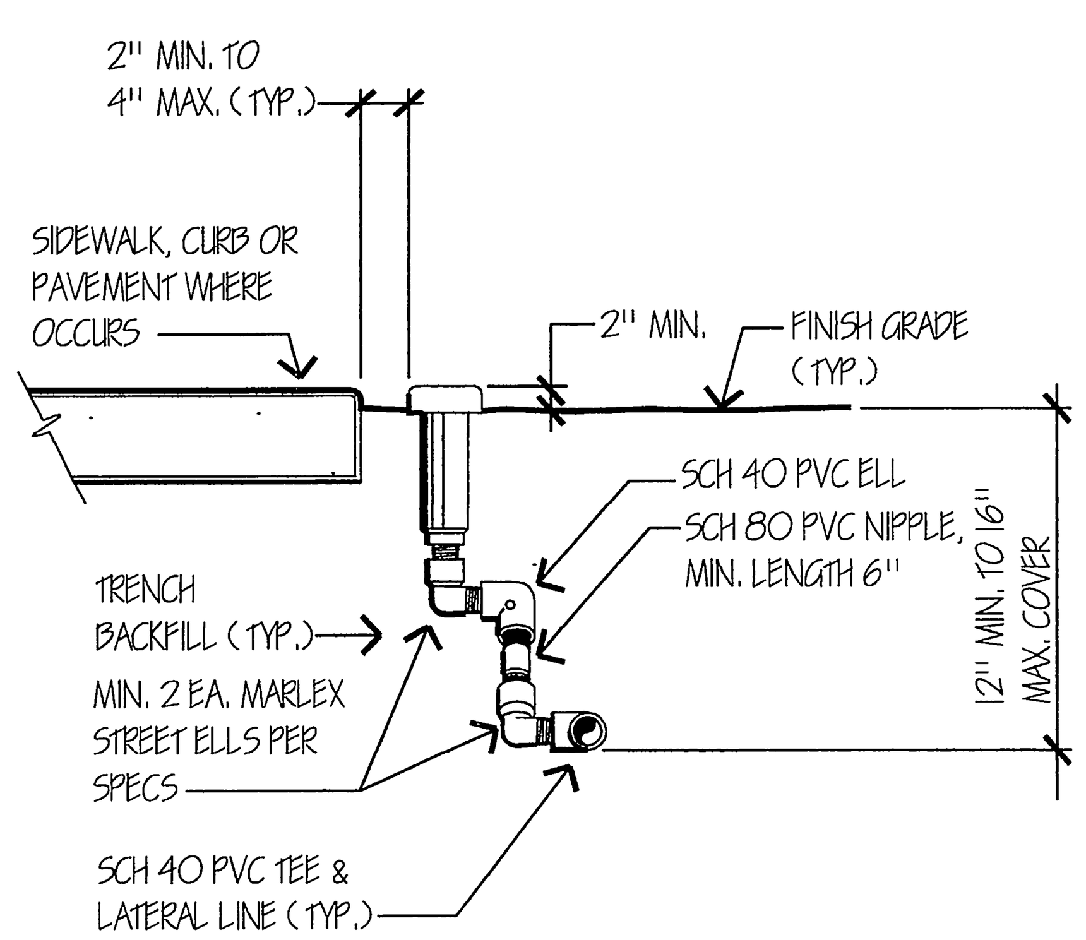
1. STRONG BOX STAINLESS STEEL ENCLOSURE, MODEL SIZED TO FIT CONTROLLER, WITH SERVICE ADDRESS STENCILED ON LOCKING HINGED DOOR. SECURELY ANCHOR ENCLOSURE TO CONCRETE PAD.
2. WEATHER PROOF AUTOMATIC CONTROLLER, SECURELY WALL MOUNTED TO ENCLOSURE.
3. SQUARE D BREAKER BOX MODEL Q02-4L70S, OR APPROVED EQUAL WITH SINGLE 15 AMP BREAKER AND DUPLEX OUTLET. MAKE 120 V POWER AND GROUND CONNECTION AT BREAKER BOX. MOUNT IN ENCLOSURE.
4. 3-#8 CU THW WIRES IN MIN. 2" SCH 40 PVC CONDUIT FROM CONTROLLER TO POWER SOURCE. BOND SERVICE TO BREAKER BOX.
5. #8 CU COPPER GROUND WIRE AND 5/8" BY 8' LONG DRIVEN COPPER GROUNDING ROD WITHIN ENCLOSURE. DRIVE ROD PRIOR TO INSTALLATION OF ENCLOSURE.
6. CONCRETE PAD, EXTEND SUFFICIENT DISTANCE IN FRONT OF ENCLOSURE TO ALLOW UNOBSTRUCTED AREA FOR DOOR SWING FREE OF PLANTINGS, 6" MIN. BEYOND ENCLOSURE ON ALL OTHER SIDES.
7. LOW VOLTAGE DIRECT BURIAL WIRES TO CONTROL VALVES.
8. 90° WRAPPED HDG SWEEP ELL, SIZED TO FIT WIRE FOR NUMBER OF STATIONS ON THE CONTROLLER, PLUS SPARES AND COMMON.
9. THREE FOOT EXPANSION LOOP OF CONTROL WIRE, NEATLY LACED WITH ZIP-LOCKS. MAKE CONNECTION DIRECTLY TO IRRIGATION CONTROLLER TERMINALS FOR 12 STATION & SMALLER. USE TERMINAL STRIPS FOR CONTROLLERS LARGER THAN 12 STATIONS.
10. PROVIDE INSULATING ELECTRICAL BUSHINGS AT CONTROLLER AND END OF CONDUITS.

Approved BJ	Date 05/01/02	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
Revised BJ - Rev. Conductors	Date 11/21/02	IRRIGATION CONTROLLER	4070

A IRRIGATION CONTROLLER N.T.S.



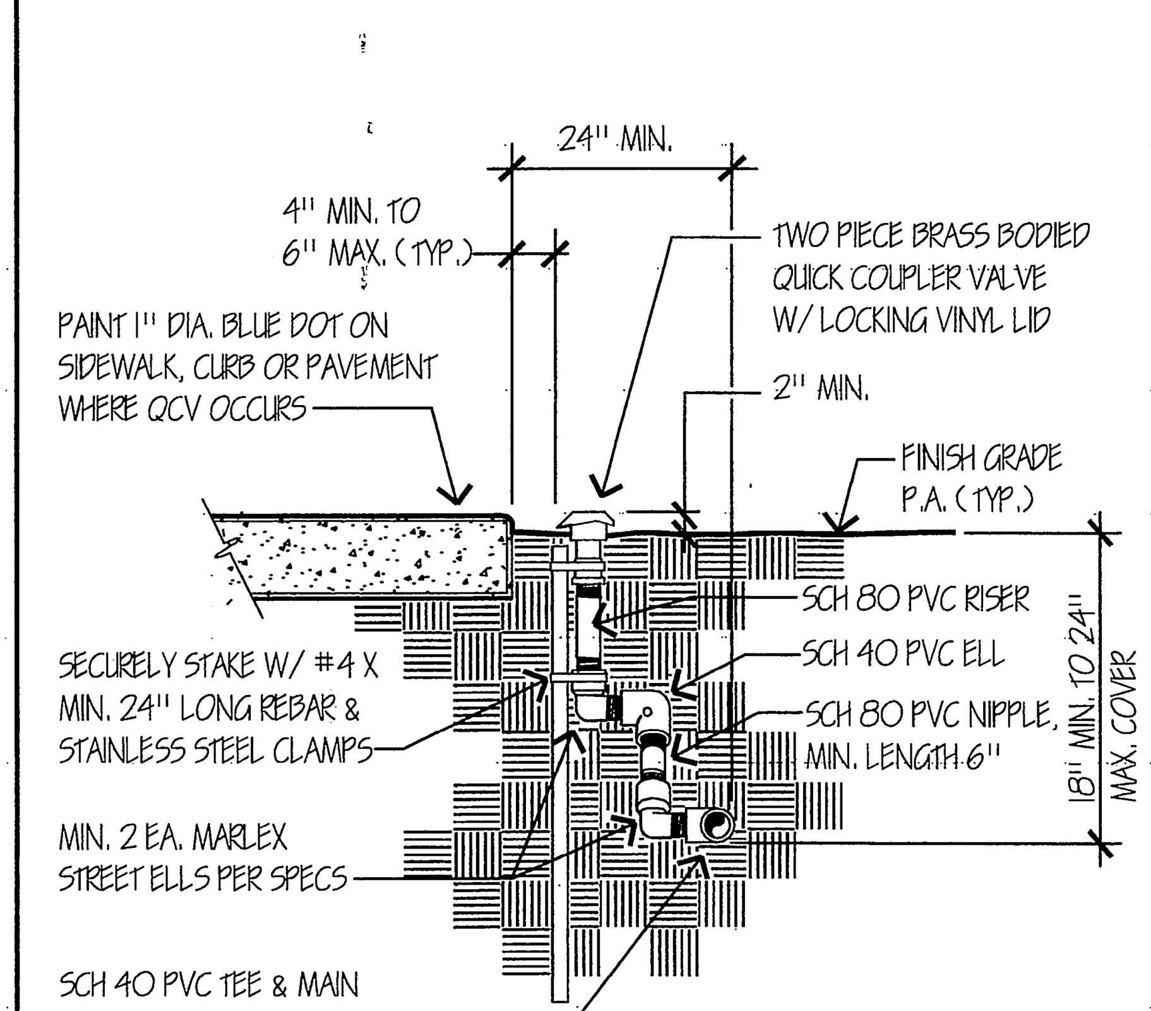
I PUMP TECHNICAL INFORMATION



NOT TO SCALE

Approved BJ	Date 08/28/03	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
Revised	Date	IRRIGATION SPRAY HEAD	4040

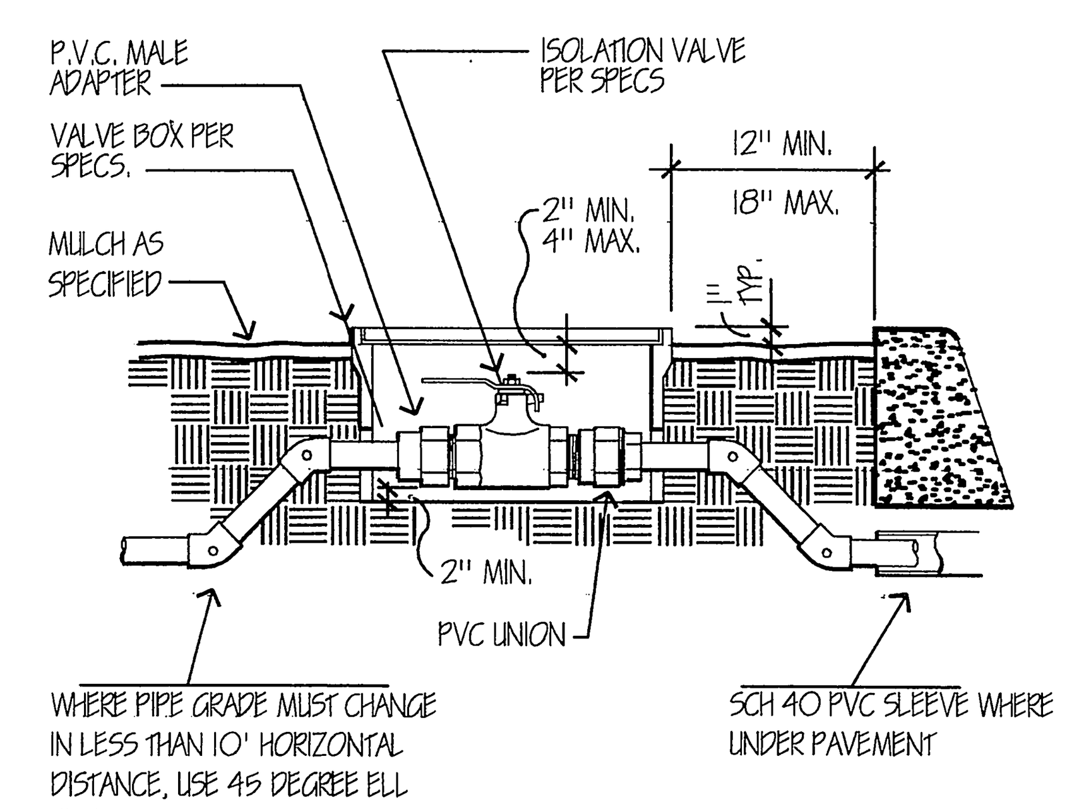
H SHRUB POP UP N.T.S.



NOT TO SCALE

Approved BJ	Date 08/28/03	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
Revised	Date	QUICK COUPLER VALVE	4050

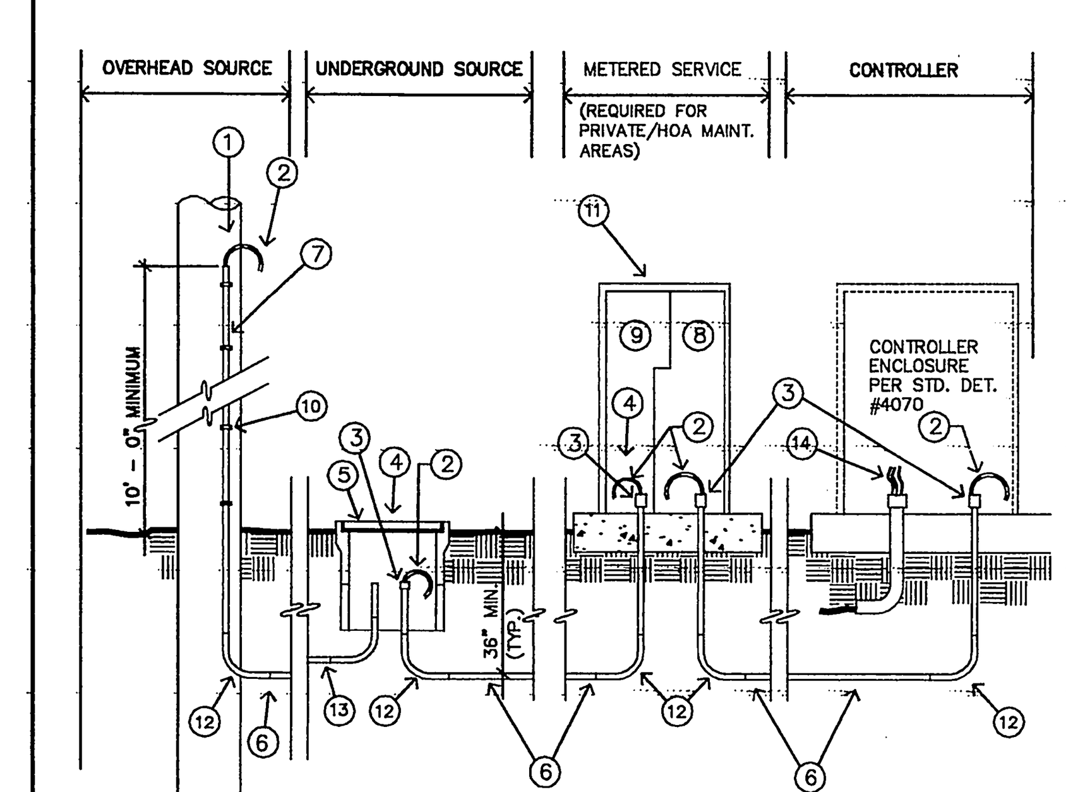
F QUICKCOUPLER N.T.S.



NOT TO SCALE

Approved BJ	Date 08/28/03	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
Revised	Date	ISOLATION VALVE IN BOX	4052

D ISOLATION VALVE N.T.S.



CONSTRUCTION NOTES: NOT TO SCALE

1. COORDINATE W/UTILITIES-ELECTRIC(909/826-5393) FOR RISER LOCATION ON POLE.
2. 3-#8 CU THW WIRES. CONTRACTOR TO PROVIDE SUFFICIENT WIRE LENGTH BEYOND END OF CONDUIT TO REACH OVERHEAD SECONDARY LINES FOR OVERHEAD SERVICE AND TO PROVIDE 2 FEET OF WIRE BEYOND CONDUIT END AT UGS BOX & 4 FEET OF WIRE AT METER AND CONTROLLER. ID NEUTRAL.
3. PROVIDE INSULATING BUSHING, TERMINATE CONDUIT PER UTILITIES SPEC. UGS-311.
4. P.U. ELECTRIC WILL MAKE SERVICE CONNECTIONS IN UGS BOX FOR NON-METERED SERVICE, AND WILL MAKE CONNECTIONS AT UGS BOX AND SERVICE SIDE OF METER FOR METERED SERVICES.
5. ELECTRIC SERVICE BOX, SIZE PER PUBLIC UTILITIES STANDARDS.
6. MIN. 2" SERVICE CONDUIT PER CITY STDS.; DB BELOW GRADE, HDG ABOVE GRADE, HDG WRAPPED SWEEPS.
7. ~~LINE SIZE HDG CONDUIT WITH 3-#8 CU THW WIRES, PER UTILITIES STANDARDS. ID NEUTRAL~~
8. LOAD SECTION.
9. SERVICE SECTION.
10. MINIMUM 3 PIPE STRAPS.
11. METER PEDESTAL PER E.U.S.E.R.C. DRAWING #308. SUBMIT CATALOG CUTS TO P.U.-ELECTRIC FOR APPROVAL PRIOR TO INSTALLATION.
12. LINE SIZE WRAPPED HDG SWEEP ELL, MIN. 9" RAD. (TYP.)
13. EXISTING SERVICE CONDUIT.
14. LOW VOLTAGE IRRIGATION CONTROL WIRE & CONDUIT PER P&R STD. SPECS.

Approved BJ	Date 05/01/02	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
Revised BJ Rev. Conductors	Date 11/21/02	ELECTRIC SERVICE NON-METERED (CITY MAINTAINED)/METERED (HOA MAINTAINED)	4062

B ELECTRIC SERVICE N.T.S.

BENCHMARK:
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1-800-422-4133
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

BR 10/6/03

REGISTERED LANDSCAPE ARCHITECT
RANDOLPH HLUBIK NO. 1512
Signature
7/31/05
Renewal Date
9.29.03
Date
STATE OF CALIFORNIA

RHA LANDSCAPE ARCHITECTS PLANNERS, INC.
JOB #03105

3612 MISSION INN AVE
RIVERSIDE, CALIFORNIA
92501
(909) 781-1930
LIC. #1512
FAX (909) 686-6091
CONTACT: CAMILO ARELLANO

MARK	REVISIONS	APPR.	DATE
△			

DESIGNED BY CA DRAWN BY DB CHECKED BY

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER	DH	10/6/03
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT	BKS	10/06/03

APPROVED BY
PUBLIC WORKS DIRECTOR
DATE 10/8/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
IRRIGATION DETAILS
HORIZ. SCALE: NTS VERT. SCALE: NTS

ACCT. NO.
PLAN NO:
R-3071-L
SHEET 4 OF 9
DRAWING: 4

PRP03-0005 / PC-4389-R

09-08-03 PRJ:\03prj\03105\Tract 30718\AutoCad\03105.dwg
INDEXED 10-15-03 LH

SECTION 02441 - IRRIGATION

PART 1 - GENERAL

1.01 STANDARD SPECIFICATIONS: The provisions of the "Standard Specifications for Public Works Construction", current edition, shall apply except as modified herein.

1.02 SCOPE: The Work of this Section shall consist of furnishing all labor, materials, equipment, appliances and services necessary for the execution and completion of all Irrigation Work as shown on the Plans and as described in the Specifications including, but not necessarily limited to, the following:
Provide complete operating irrigation systems;
Installation of new and refurbishment of existing irrigation systems as necessary to provide complete operating irrigation
systems for all planting areas within the Work Limits;
120 volt electrical service for and connection to the controller;
Irrigation Controller within lockable Controller Enclosure as designated on the Approved Plans;
Coordination with Work of other Sections;
Testing;
Clean-up;
Replacements, Repairs, Guarantees and Warranty Work.
1.03 RELATED WORK:
Planting 02480

1.04 SUBMITTALS:
A. Materials List: Contractor shall submit a complete materials list for approval by the Park Projects Inspector prior to performing any Work. Catalog data and full descriptive literature must be submitted whenever the use of items different than those specified is requested. Notarized certificate must be submitted by plastic pipe and fitting manufacturer indicating that material complies with the Project Specifications, unless material has been previously approved, and used on other projects by City. Material list shall be submitted using the following format:

Item	Description	Manufacturer	Model No.
1	Pressure Supply Line	Lasco	Sch. 40
2	Lawn Head	Rainbird	2400
etc.	etc.	etc.	etc.

B. "Record" Prints:
1. Record accurately on one set of blue-line prints all changes in the Work constituting departures from the Plans, including changes in pressure and non-pressure line locations.
2. The changes and dimensions shall be recorded in a legible and workmanlike manner to the satisfaction of the Park Projects Inspector. Prior to final inspection of the Work, submit "record" Mylar prints to City for approval.
3. Dimension from two permanent points of reference (buildings, monuments, sidewalks, curbs, pavement, etc.). Data to be shown on "record" prints shall be recorded day-to-day as the project is being installed.
4. Show locations and depths of the following items:
a) Point of connection.
b) Routing of irrigation pressure lines (dimension maximum 100 feet along routing).
c) Ball valves.
d) Irrigation remote control valves.
e) Quick coupling valves.
f) Routing of control wires.
g) Related equipment (as may be directed).
5. Maintain record prints on site at all times.

1.05 INSPECTIONS:
A. Inspections will be required for:
1. Pressure test of irrigation main line.
2. Coverage test.
3. Final inspection/start of maintenance.
4. Final acceptance.
B. Inspection Requests: Contractor shall notify the Park Projects Inspector a minimum of 48 hours (two working days) in advance for all inspections including the following:
1. Pressure supply line installation and testing
2. System layout
3. Coverage tests
4. Final Inspection
C. Evidence of Inspection by Others: When inspections have been conducted by other than the Park Projects Inspector, Contractor shall show evidence of when and by whom these inspections were made.
D. Requirements for Inspection: No inspection is to commence without "record" prints available on the site. In the event Contractor calls for an inspection without up to date "record" prints, without completing previously noted corrections, or without preparing the system for inspection, the inspection may be canceled.
E. Closing in Uninspected Work: Do not allow or cause any of the Work of this Section to be covered up or enclosed until it has been inspected, tested and approved by the Park Projects Inspector.
F. Coverage test: When the irrigation system is completed, Contractor shall perform a coverage test in the presence of the Park Projects Inspector to determine if the water coverage for planting areas is complete and adequate. This test must be accepted by the Park Projects Inspector before planting may commence.
G. Hydrostatic test:
1. Prior to the installation of any valves, all pressure lines shall be tested under a hydrostatic pressure of 150 psi for a period of not less than two hours, with all ends of lines capped and the line fully charged with water after all air has been expelled from the line.
2. All hydrostatic tests shall be made in the presence of the Park Projects Inspector or Inspector's designated representative. No pressure line shall be backfilled until it has been inspected, tested, approved in writing, and the mainline and valve locations have been noted on the "record" prints.
3. Contractor shall furnish the necessary force pump and all other test equipment, and shall perform the test.

1.06 TURNOVER ITEMS:
A. Controller Charts:
1. "Record" prints must be approved by the Park Projects Inspector before charts are prepared.
2. Provide one controller chart for each automatic controller. The chart shall show the entire area covered by the controller, preferably in a single sheet. The chart shall be a reduced copy of the approved "record" print. Reduce the print to a size that is the maximum dimensions that will fit within the controller door without folding. If the controller sequence is illegible at this reduction scale, the chart may be provided as a "multi-sheet" chart to provide adequate legibility.
3. Each control station on the Chart shall be marked with a different color to show its area of coverage.
4. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being minimum 20 mils in thickness. The chart shall be installed in the controller enclosure using Velcro fasteners, and three different color grease pencils (red, black and blue) shall be provided in the enclosure for maintenance notations on the chart.
5. Controller charts shall be completed prior to the final acceptance inspection.
B. Operation and Maintenance Manuals: Within a minimum of 14 calendar days prior to acceptance of construction, prepare and deliver to the Park Projects Inspector all required descriptive materials, properly prepared in two individually bound copies of the operation and maintenance manual. The manual shall describe the material installed and shall be in sufficient detail to permit operating personnel to identify, operate, and maintain all equipment. Spare parts lists and related manufacturer's information shall be included for each equipment item installed. Each complete, bound manual shall include the following information:
1. Index sheet stating Contractor's address and telephone number, including names and addresses and telephone numbers of local manufacturer's representatives.
2. Complete operating and maintenance instructions on all major equipment.
C. Materials to be furnished: The following items shall be supplied as part of this Contract and shall be turned over to the Park Projects Inspector at the conclusion of the Project at the Final Acceptance Inspection:
1. 4% additional irrigation heads of each type and spray pattern shown.
2. Two (2) special tools/wrenches for disassembly and adjustment of each type irrigation equipment/heads installed that require such special tools/wrenches.
3. Two keys for each type of automatic controller. spec
4. Two quick coupler "quills" with a 3/4" bronze hose bib, bent nose type with hand wheel and two quick coupler locking lid keys.
5. One valve box cover key.
6. "Record" prints.
7. Remove and turn over backflow device valve handles.
8. Documentation of Water Department's inspection and acceptance of backflow device.

1.07 GUARANTEE:
A. General: The entire irrigation system, including all Work done under this Contract, shall be guaranteed against all defects and fault of material and workmanship for a period of one (1) year following Final Acceptance of the Work as documented by the Notice of Completion filed with the Riverside County Recorder's Office. All materials used shall carry a manufacturer's guarantee of one (1) year. Should any problem with the irrigation system be discovered within the guarantee period, it shall be corrected by Contractor at no additional expense to City within fourteen (14) calendar days of receipt of written notice from City.
B. Form of Guarantee: Guarantee shall be submitted on Contractors own letterhead as follows:

GUARANTEE FOR IRRIGATION SYSTEM
PROJECT:
LOCATION:
We hereby guarantee the irrigation system we have furnished and installed against defects in materials and workmanship, ordinary wear and tear and unusual abuse, or neglect excepted, and that the Work has been completed in accordance with the Plans and Specifications. We agree to repair or replace any or all of the Work, together with any other adjacent Work which may be displaced by so doing, that may prove to be defective in its workmanship or materials within a period of one (1) year after the date the Notice of Completion for the above named Project is filed with the County Recorder by the City of Riverside, California, at no additional cost to City. We shall make such repairs or replacements within 14 calendar days following written notification by City. When the immediate repair or replacement of the Work is necessary to ensure the public safety and welfare, which would be endangered by continued usage of the facility, such circumstance will be deemed an operational emergency. In the event of such an emergency, after City contacts our firm and after authorizing 24 hours to initiate repairs, if we fail to initiate and diligently complete such repairs in a timely manner, the Director may direct City forces to perform such functions as the Director may deem necessary to correct the Work and immediately place the facility back in operational condition. If such procedure is implemented, we shall bear all expenses incurred by City. In all cases, the judgment of the Director shall be final in determining whether an operational emergency exists. In the event of our failure to make such repairs or replacements within the time specified after receipt of written notice from City (other than an operational emergency), we authorize City to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefor upon demand.
PRINTED NAME & TITLE:
SIGNATURE:
ADDRESS:
PHONE: ( )
(Area Code) Number

C. Operational Instruction: After the system has been completed, Contractor shall instruct the Park Projects Inspector in the operation and maintenance of the system and shall furnish a complete set of operating instructions.
D. Trench Settlement: Any settling of trenches which may occur during the one-year period following acceptance shall be repaired to City's satisfaction by Contractor without any additional expense to City. Repairs shall include the complete restoration of all planting, paving or other improvements of any kind which are damaged as a result of the Work.

PART 2 - MATERIALS

2.01 GENERAL: All materials shall conform with Section 212 - 2 IRRIGATION SYSTEM MATERIALS of the Standard Specification except as modified herein.

2.02 PIPE AND FITTINGS:
A. General:
1. Pressure supply lines 2 inches in diameter and up to 8 inches in diameter shall be either Class 315 solvent weld PVC or Class 200 rubber gasket type PVC. Solvent weld and ring type pipe shall not be used together on the same pressure supply line.
2. Pressure supply lines 1-1/2 inches in diameter and smaller shall be minimum schedule 40 PVC.
3. Lateral lines shall be minimum Class 200 PVC.
B. Plastic Pipe:
1. Add the following to Standard Specifications Section 212-2.1.3 Plastic Pipe for Use with Solvent Weld Socket or Threaded Fittings:
"All plastic pipe shall bear the following markings: manufacturer's name, nominal pipe size, schedule or class, type of material, pressure rating in PSI, NSF seal of approval, and date of extrusion."
2. Amend Standard Specifications Section 212-2.1.3 Plastic Pipe for Use with Solvent Weld Socket or Threaded Fittings to read:
"All plastic pipe fittings shall be standard weight schedule 40 and shall be injection molded of an improved PVC fitting compound. All threaded plastic fittings shall have injection molded threads. No cut threads will be accepted on PVC pipe and fittings. All tees and ells shall be manufactured in injection molds that are sidegated. All threaded nipples shall be standard weight schedule 80 with molded threads. "
C. Asbestos Cement Pipe (ACP): Is not approved for use on City projects.

2.03 VALVES AND VALVE BOXES:
A. Valves:
1. Ball Valves: All ball valves shall be bronze bodied, capable of withstanding a minimum working pressure of not less than 150 psi.
2. Quick-Coupling Valves: Add the following to Standard Specifications Section 212-2.2.6 Quick Coupling Valves and Assemblies:
Quick coupling valves shall have locking vinyl cover and shall be 1" in size.
3. Remote Control Valves: Add the following to Standard Specifications Section 212-2.2.4 Remote Control Valves:
a) Valves shall be spring-loaded, self-cleaning, packless diaphragm activated, of a normally closed type.
b) Valve solenoid shall be corrosion-proof and constructed of stainless steel molded in epoxy to form one integral unit, and shall be 24 volt A.C., 2.0 watt maximum (2" and smaller valves).
c) Valve shall close against flow without chatter and with minimum closing surge pressure (minimum 5 seconds closing time per valve).
d) Valve shall be completely serviceable in the field without removing valve body from line.
B. Boxes:
1. Plastic Valve Boxes: (For use on HOA Maintained Irrigation Systems only)
a) General: Valve boxes and covers shall be fabricated from a durable plastic material resistant to weather, sunlight and chemical reactions. The covers shall be secured with a hidden latch mechanism or bolts. The cover and box shall be capable of sustaining a load of 1,500 pounds. Valve box extensions shall be by the same manufacturer as the valve box. The box covers shall be factory embossed for the designated use and stenciled by the installer with 2" high letters in a contrasting color as noted below. Boxes and covers shall be as manufactured by AMETEK or City approved equal.
b) Rectangular Plastic Boxes and Covers: Shall be a minimum of 12" wide x 18 long", with depths as necessary to protect the valve and provide the clear dimensions as detailed and/or specified. The covers shall be embossed with words or initials to identify the use for the box (e.g. "Ball Valve" or the letters "B.V.") as noted on the Plan.
c) Round Plastic Boxes and Covers: Shall be minimum 12" diameter, round boxes with covers embossed with words to identify the use for the box (e.g. "Quick Coupler Valve" or the letters "Q.C.V.") and shall be marked as noted on the Plans

2.04 BACKFLOW PREVENTION DEVICE: Add the following to Standard Specifications Section 212-2.3 Backflow Preventer Assembly: The backflow prevention unit shall be a reduced pressure type vacuum breaker of the size, manufacture, and model number as indicated on the Plans. If not indicated, the device shall be the same size as the water service and the manufacturer and model number shall be as approved by the Park Projects Inspector.

2.05 IRRIGATION HEADS: All irrigation heads shall be as shown on the Plans and shall conform with Section 212-2.4 Sprinkler Equipment of the Standard Specifications. All heads used on the same control valve shall be matched precipitation rate heads. All heads used on turf shall be minimum 6" pop-up types; all heads used in shrub areas shall be minimum 12" pop-up types.

2.06 ELECTRICAL MATERIALS:
A. Conduit: Amend Standard Specifications Section 212-3.2.1 Conduit to read: All conduit below grade shall be schedule 40 PVC of sufficient size to carry all proposed wiring. Conduit above grade shall be galvanized steel per the Standard Specifications. Low Voltage (24 volt) wiring shall be provided with a separate conduit/sleeve from both high voltage wiring (110/120 volt and higher) and the irrigation mainline sleeve.
B. Electrical Service: Materials for electrical service shall comply with the standard specifications, governing utility agency standards, and requirements of all applicable codes. All controllers serving landscape areas that will not being turned over to the City for maintenance, shall be powered through a metered electrical service. Controllers serving landscape areas to be maintained by the City shall be powered through a non-metered electrical service.
C. Wire: Add the following to Standard Specifications Section 212-3.2.2 Conductors: "All low voltage conductors shall be 14 gauge for control and 12 gauge for common wires. All low voltage common wire shall be white with a colored stripe. Stripe color shall be different for each controller installed. All low voltage control wire shall be of one color other than white or green. A different color control wire shall be used for each controller installed."

2.07 CONTROLLER UNIT: Add the following to Standard Specifications Section 212-3.3 Controller Unit:
A. Controller: Shall be wall mounted type, as indicated on the Plans, with a heavy duty watertight case and locking hinged cover, installed within a lockable steel enclosure.
B. Controller Enclosure: Shall be metal, sized to fit the controller and the other electrical components as required per Standard Detail 4060, Le Meur - Type V, Strongbox - sized to fit unit, or City approved equal.

PART 3 - EXECUTION
3.01 GENERAL: All Work shall conform with Section 308 LANDSCAPE AND IRRIGATION INSTALLATION of the Standard Specifications except as modified herein. No Work of this Section other than sleeving under pavement shall commence prior to the completion and acceptance of all Grading Work.
Add the following to Standard Specifications Section 308-5.1 General:

A. Irrigation System Design & Water Supply:
1. The irrigation system design is based upon an available water pressure of 86 p.s.i. at a flow rate of 58 g.p.m. Individual stations are designed to this minimum p.s.i. The system is also designed to withstand a maximum pressure of 100 p.s.i. Contractor shall verify the size of the existing water supply/meter and the existing operating water pressure at the water supply location shown on the Plans prior to starting construction. Contractor shall notify the Park Projects Inspector in writing of any discrepancies noted. Failure to provide such written notification may cause Contractor to provide for modifications to the irrigation system as necessary to provide for a fully operational system providing 100% coverage at the operating pressure available, all at no additional cost to City.
2. Connection to, or the installation of, the water supply shall be at the location shown on the Plans. Minor changes caused by actual site conditions shall be made at no additional cost to City.
B. Electrical Service: Contractor shall provide a metered electrical service as required, and shall make the final 120 V connection to the irrigation controller.
C. Code Requirements: Prior to all Work of this Section, Contractor shall carefully inspect the installed Work of all other trades and verify that all such Work is complete to the point where this installation may properly commence. Verify that the irrigation system may be installed in strict accordance with all pertinent codes and regulations, the original design, the referenced standards, and the manufacturer's recommendations.
In the event any equipment or methods indicated on the Plans or in the Specifications is in conflict with local codes, immediately notify the Park Projects Inspector prior to installing the Work. If this notification is not provided, Contractor shall assume full responsibility for the cost of all revisions necessary to comply with all codes.
D. Grades: Contractor is to keep within the specified material depths with respect to finish grade. Failure to obtain specified material depths may subject Contractor to adjusting the grades or depth of lines until acceptable depths of cover are achieved, all as directed by the Park Projects Inspector and at no additional cost to City.
E. Coordination with Work of Other Trades: Make all necessary measurements in the field to ensure precise fit of items in accordance with the original design. Contractor shall coordinate the installation of all irrigation materials with all other Work. Special attention shall be given to coordination of piping locations versus tree and shrub locations and sleeve locations versus pavement installation to avoid conflicts.
F. Maintain Record Prints: Contractor shall maintain "record" prints on site at all times. Upon completion of the Work, transfer all "record" information on changes and dimensions to reproducible Mylar prints. The changes and dimensions shall be recorded in a legible and workmanlike manner, to the satisfaction of the Park Projects Inspector.

3.02 TRENCHING AND BACKFILLING:
A. Trenching:
1. Add the following to Standard Specifications Section 308-2.2 Trench Excavation and Backfill: Dig trenches and support pipe continuously on bottom of ditch. Where lines occur under paved areas, depth dimensions shall be considered below subgrade.
2. Amend Standard Specifications Section 308-2.2, Subparagraph 2 Waterlines continuously pressurized) to read: Water lines continuously pressurized - minimum 18 inches, maximum 24 inches. (These measurements are to be from subgrade elevation for piping under pavement.)
3. Amend Standard Specifications Section 308-2.2, Subparagraph 3 Lateral sprinkler lines) to read: Lateral irrigation lines - minimum 12 inches and maximum 16 inches. All main lines and lateral lines running parallel to other such lines shall have a minimum horizontal separation of 12".
4. Add the following to Standard Specifications Section 308-2.2 Trench Excavation and Backfill: Where it is necessary to excavate adjacent to existing trees, Contractor shall avoid injury to trees and tree roots. Excavation in areas where 2-inch and larger roots occur shall be done by hand. All roots 2 inches and larger in diameter shall be tunneled under and shall be heavily wrapped with wet burlap to prevent scarring or drying. Where trenching machine is run close to trees having roots smaller than 2 inches in diameter, the wall of the trench adjacent to the tree shall be hand trimmed, making a clean cut through the roots. Roots 1 inch and larger in diameter shall be painted with two coats of tree seal or approved equal. Trenches adjacent to trees shall be closed within 24 hours.
5. Permanent Resurfacing: Add the following to Standard Specifications Section 308-5.1 General: All surface improvements damaged or removed as a result of Contractor's operations shall be reconstructed by Contractor to the same dimensions, except for pavement thickness, and with the same type materials used in the original Work. Trench resurfacing shall be 1 inch greater in thickness than existing pavement. Concrete pavement shall be removed and replaced in "full panels" with no horizontal dimension less than five (5) feet. Contractor shall review the planned limits and lines of concrete removal and replacement with the Park Projects Inspector prior to sawcutting for Removal Work.
B. Backfill:
1. Amend Standard Specifications Section 308-2.2 Trench Excavation and Backfill to read: " Backfill shall be uniformly tamped in 4-inch layers under and around the pipe for the full width of the trench and the full length of the pipe. Materials shall be sufficiently damp to permit thorough compaction, free of voids. Backfill shall be compacted to dry density equal to adjacent undisturbed soil and shall conform to adjacent grades."
2. Add the following to Standard Specifications Section 308-2.2 Trench Excavation and Backfill:
a) Flooding in lieu of tamping is not allowed without specific prior written approval of the Park Projects Inspector.
b) Under no circumstances shall the wheels of any vehicle not designed for the purpose of soils compaction be used to compact backfill.

3.03 PIPE INSTALLATION:
A. General: Add the following to Standard Specifications Section 308-5.2.1 Irrigation Pipeline Installation, General:
1. Piping under existing pavement may be installed by jacking, boring, or hydraulic driving. However, no hydraulic driving is permitted under asphaltic concrete pavement.
2. Cutting or breaking of existing pavement is not permitted except as approved in writing by Park Projects Inspector. When approved, all necessary repairs and replacements will be made at no additional cost to City.
3. Carefully inspect all pipe and fittings before installation, removing all dirt, scale and burrs and reaming; install pipe with all markings up for visual inspection and verification.
4. Contractor shall install concrete thrust blocking per the manufacturer's recommendations at all changes of direction and terminal points of pressure pipe.
5. Parallel lines shall not be installed directly over one another. Provide a minimum of 12" horizontal separation for all parallel lines.
6. For plastic-to-metal connections, work the metal connections first. Use a non-hardening pipe dope on all threaded plastic-to-metal connections, except where noted otherwise.
7. All piping under pavement shall be sleeved using schedule 40 PVC sleeves. Each line shall be separately sleeved.
8. Do not install multiple assemblies ("manifold") on plastic lines. Provide each equipment assembly (e.g. RCV, quick coupler, ball valve, head, backflow device) with its own connection to its service line.
B. Plastic Pipe: Add the following to Standard Specifications Section 308-5.2.3 Plastic Pipeline:
1. Exercise care in handling, loading, unloading and storing plastic pipe and fittings, store plastic pipe and fittings under cover until ready to install; transport plastic pipe on a vehicle with a bed long enough to allow pipe to lay flat, avoid undue bending and any concentrated external load.
2. 360° applicators shall be used to apply primer and solvent on pipe sizes 2-1/2 inches and larger.
3.04 BACKFLOW INSTALLATION: Add the following to Standard Specifications Section 308-5.3 Installation of Valves, Valve Boxes, and Special Equipment: Install backflow assemblies at locations approved in the field by the Park Projects Inspector and at heights required by local codes.
3.05 VALVE AND VALVE BOX INSTALLATION:
A. Valves:
1. Amend Standard Specifications Section 308-5.3 Installation of Valves, Valve Boxes, and Special Equipment to read: Valves shall be the same size as the pipeline in which valves are installed unless otherwise specified on the Plans. Valves shall be installed a minimum of three feet in horizontal distance apart, each with its own connection to the pressure main line.
2. Amend Standard Specifications Section 308-5.3 Installation of Valves, Valve Boxes, and Special Equipment to read: Install quick couplers within valve boxes per the Park and Recreation Department's standards at maximum 75' o.c., and maximum 50' from ends of all planting areas.
3. Add the following to Standard Specifications Section 308-5.3 Installation of Valves, Valve Boxes, and Special Equipment: Valves shall be installed in shrub areas whenever possible. No valves or valve boxes other than quick coupler valves shall be installed within a designated turf area.
B. Valve Boxes:
1. General: Valve boxes shall be installed with a minimum of 2" vertical clearance between the box and all pipelines and valve components and/or special equipment within the box. Valve boxes found resting on either the valve, special equipment or pipelines shall be cause for rejection of the installation.
2. Uses:
a) Plastic Valve Boxes: (for HOA Maintained irrigation systems only)
i) Rectangular: Unless noted otherwise on the Plans, each remote control valve, all wire splices, and each master control valve shall be installed within a rectangular plastic valve box.
ii) Round: Unless noted otherwise on the Plans, each quick coupler valve (except where located within the infield of a baseball/softball field) and each ball valve shall be installed within a round plastic valve box.
iii) Round: Unless noted otherwise on the Plans, ball valves and/or gate valves shall be installed within a round plastic valve box.
3.06 IRRIGATION HEAD INSTALLATION: Amend Standard Specifications Section 308-5.4.1 Sprinkler Head Installation and Adjustment, General to read: Irrigation heads shall be installed as designated on the Plans and per the Park and Recreation Department's standard details. Upon coverage testing of the system if 100 % coverage is not afforded by the system as designed, additional heads shall be added as necessary to achieve 100 % coverage.
3.07 CONTROLLER INSTALLATION: Add the following to Standard Specifications Section 308-5.5 Automatic Control System Installation:
A. Controller Installation: The controller location, as shown on the Plans, is diagrammatic. The final location of the controller(s) shall be as approved by the Park Projects Inspector before installation. Typical controller location shall be mid-block 3' behind the sidewalk. If replacement of existing controller(s) is a part of the project, Contractor shall remove the existing controller(s) and replace with the replacement unit as specified. Contractor shall install all conduit runs, 120V wire and cable, and 24V control wire, as necessary for a complete and operational system.
B. Controller Enclosure:
(1) Conventional Type: The controller shall be wall mounted within a LeMeur vandal resistant enclosure, unless noted otherwise on the Plans. Controller enclosure shall be located in shrub areas and/or adjacent to other hardscape items. Enclosure shall be painted with two coats of paint, color as approved, and shall have the service address painted in a contrasting color on the enclosure door; submit color samples. A 4" thick concrete slab for maintenance access shall be provided, size approximately 15 sq. ft., line, grade and dimensions as directed by the Park Projects Inspector.
B. Coordination of Controller Location with Various Service Connections: Contractor shall coordinate the electrical service with the approved controller location. Contractor shall verify the locations of 120V power prior to installing controller(s) and shall coordinate final assembly mounting locations with the needed utilities. Contractor shall furnish and install grounding rods and ground wires for each controller. Ground rods shall be installed a minimum of eight feet from their respective controller housing and the ground wire run back to the controller.
C. Controller Connections: Contractor shall inspect, test, and certify all low voltage control wire splices and ground rod installations as applicable. Any repairs as necessary to provide properly operating wiring are to be made by Contractor at no additional cost to City. After repairs are satisfactorily completed, Contractor shall connect the ground wires to the ground rods and the controller(s).
D. Controller Programming: Following establishment of the turf, the irrigation system shall be programmed to operate during the periods of minimal use of the Project area (i.e., 11:00 p.m. through 6:00 a.m.).

3.08 WIRING:
A. Wiring: Add the following to Standard Specifications Section 308-5.5 Automatic Control System Installation: 1. All splice connections shall occur in a valve box. All wire runs between the valve and the controller shall be a continuous run with no splices unless noted otherwise on the Plans.
2. All low voltage wiring splices shall be made-up as soldered connections, wrapped with a minimum of two (2) layers of electrical tape and sealed with Scotch-coat. Scotch-lok, Uni-pack, Penn-tite, or other similar type connectors are not acceptable.

3.09 FINISHING AND TESTING: Amend Standard Specifications Section 308-5.6.2 Pipeline Pressure Test to read:
Pressure test the mains - minimum 2 hours at 150 PSI. Add the following to Standard Specifications Section 308-5.6.2 Pipeline Pressure Test: Center-load all plastic pipe prior to pressure testing. The entire system shall be operating properly before any planting operations commence.

3.10 COMPLETION CLEANING: Add the following to Standard Specifications Section 308 LANDSCAPE AND IRRIGATION INSTALLATION: Upon completion of the Work, Contractor shall smooth all ground surfaces, remove excess materials, rubbish, debris, etc., sweep adjacent streets, curbs, gutters, walkways and trails, and remove construction equipment from the premises.

END OF SECTION

BJ/02441.MAS
01/06/97

BENCHMARK:
CITY OF RIVERSIDE BENCHMARK ?.
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?

ELEVATION = ?

DIG ALERT
DIAL TOLL FREE
1-800-422-4133
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

10/6/03

REGISTERED LANDSCAPE ARCHITECT — CAMILO ARELLANO — No. 2512 — 7/31/05 — 9.29.05 — STATE OF CALIFORNIA

RHA LANDSCAPE ARCHITECTS PLANNERS, INC.
JOB #03105
3602 MISSION INN AVE
RIVERSIDE, CALIFORNIA
92501
(909) 781-1930
LIC. #1512
FAX (909) 686-8091
CONTACT: CAMILO ARELLANO

MARK	REVISIONS	APPR.	DATE
△			

DESIGNED BY CA DRAWN BY DB CHECKED BY

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER		
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT		

APPROVED BY
PUBLIC WORKS DIRECTOR
DATE 10/6/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
IRRIGATION SPECIFICATIONS
HORIZ. SCALE: 1" = 30' VERT. SCALE: 1" = 30'

ACCT. NO.
PLAN NO: R-3071-L
SHEET 5 OF 9
DRAWING: 5

PRF03-0005 / PC-4389-R

09-08-03 PRJ:\03prj\03105\Tract 30718\AutoCad\03105.dwg

INDEXED 10-15-03 GH

TEMPORARY SLOPE PLANT LEGEND

SYMBOL	BOTANICAL NAME / COMMON NAME	SIZE	SPACING	DETAIL/SHEET
SHRUBS				
⊙	ACACIA REDOLENS / PROSTRATE ACACIA	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 of 9
⊕	CALLISTEMON VIMINALIS / WEEPING BOTTLEBRUSH	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 of 9
⊙	CISTUS HYBRIDUS / WHITE ROCKROSE	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 of 9
GROUND COVER				
	WILD FLOWER MIX	HYDROSEED		

PLANT LEGEND

SYMBOL	BOTANICAL NAME / COMMON NAME	SIZE	SPACING	DETAIL/SHEET
TREES				
	LAGERSTROMIA I. 'CATAWBA' / CRAPE MYRTLE	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
	ARBUTUS UNEDO / STRAWBERRY TREE	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
	BAUHINIA VARIEGATA 'CANDIDA' / WHITE ORCHID TREE	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
	PYRUS CALLERYANA 'ARISTOCRAT' / ARISTROCRAT PEAR	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
	LOPHOSTEMON CONFERTUS / BRISBANE BOX	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
NOT SHOWN	ALL TREES LOCATED WITHIN 5' FROM ANY HARDSCAPE TO RECEIVE A DEEPROOT BARRIER			DETAIL 'D' SHEET 8 OF 9
SHRUBS				
	ACACIA REDOLENS / PROSTRATE ACACIA	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	PLUMBAGO AURICULATA / CAPE PLUMBAGO	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	PHORMIUM TENAX 'SEA JADE' / NEW ZEALAND FLAX	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	MAHONIA LOMARIIFOLIA / CHINESE HOLLY GRAPE	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	EUONYMUS JAPONICA / EVERGREEN EUONYMUS	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	RHAPHIOLEPIS INDICA / INDIAN HAWTHORN	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	CALLISTEMON VIMINALIS / WEEPING BOTTLEBRUSH	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	CARISSA MACROCARPA 'FANCY' / NATAL PLUM	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	CISTUS HYBRIDUS / WHITE ROCKROSE	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	HEMEROCALLIS / DAYLILY	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
GROUND COVER				
	LANTANA MONTEVIDENSIS / N.C.N.	1 GAL.	4' O.C.	DETAIL 'E' SHEET 8 OF 9
	TRACHELOSPERMU JASMINOIDES / STAR JASMINE	ROOTED CUTTINGS	12" O.C.	DETAIL 'E' SHEET 8 OF 9
VINE				
▲	PARTHENOCISSUS TRICUSPIDATA / BOSTON IVY	1 GAL.	10' O.C.	DETAIL 'F' SHEET 8 OF 9
MULCH				
NOT SHOWN	ALL PLANTER AREAS (EXCEPT TURF AND SLOPES) TO RECEIVE A 3" THICK LAYER OF "GORILLA HAIR" MULCH.			

NOTE:
ALL TREES SHALL HAVE A SEPERATION OF 25' MINIMUM.
ALL TREES SHALL BE LOCATED A MINIMUM OF 30' FROM SIDE STREET B.C.R.
ALL TREES SHALL BE LOCATED A MINIMUM OF 50' FROM ARTERIAL (GROVE COMMUNITY DRIVE) B.C.R.

BENCHMARK:
CITY OF RIVERSIDE BENCHMARK ?.
?
?
?
ELEVATION = ?

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DIG ALERT
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1-800-422-4133
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

10/8/03

REGISTERED LANDSCAPE ARCHITECT
RANDOLPH HLUBIK NO.1512
Signature
7/31/05
Renewal Date
9.29.03
Date
STATE OF CALIFORNIA

RHA LANDSCAPE ARCHITECTS PLANNERS, INC.
JOB #03105

3612 MISSION INN AVE
RIVERSIDE, CALIFORNIA
92501
(909) 781-1930
LIC. #1512
FAX (909) 686-8091
CONTACT: CAMILO ARELLANO

MARK	REVISIONS	APPR.	DATE

DESIGNED BY CA DRAWN BY DB CHECKED BY

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER	DH	10/6/03
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT	BO	10/6/03

APPROVED BY
PUBLIC WORKS DIRECTOR
DATE 10/8/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
PLANTING PLAN
HORIZ. SCALE: 1" = 30' VERT. SCALE: 1" = 30'

ACCT. NO.
PLAN NO:
R-3071-L
SHEET 6 OF 9
DRAWING: 6

PRP03-0005 / PC-4389-R

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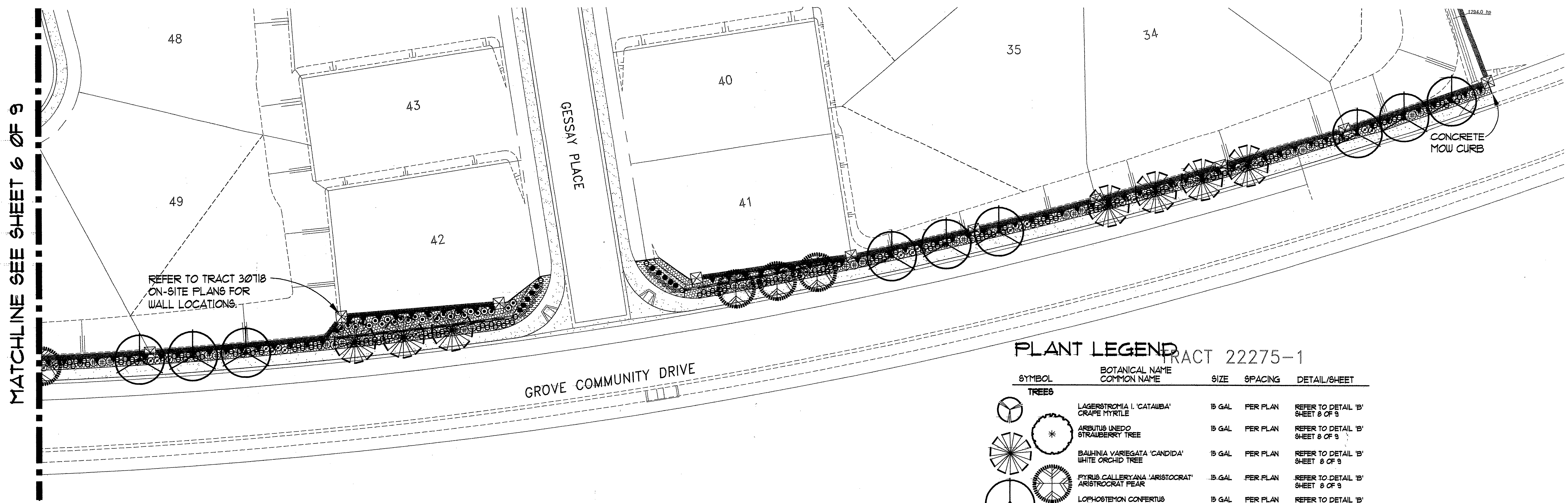


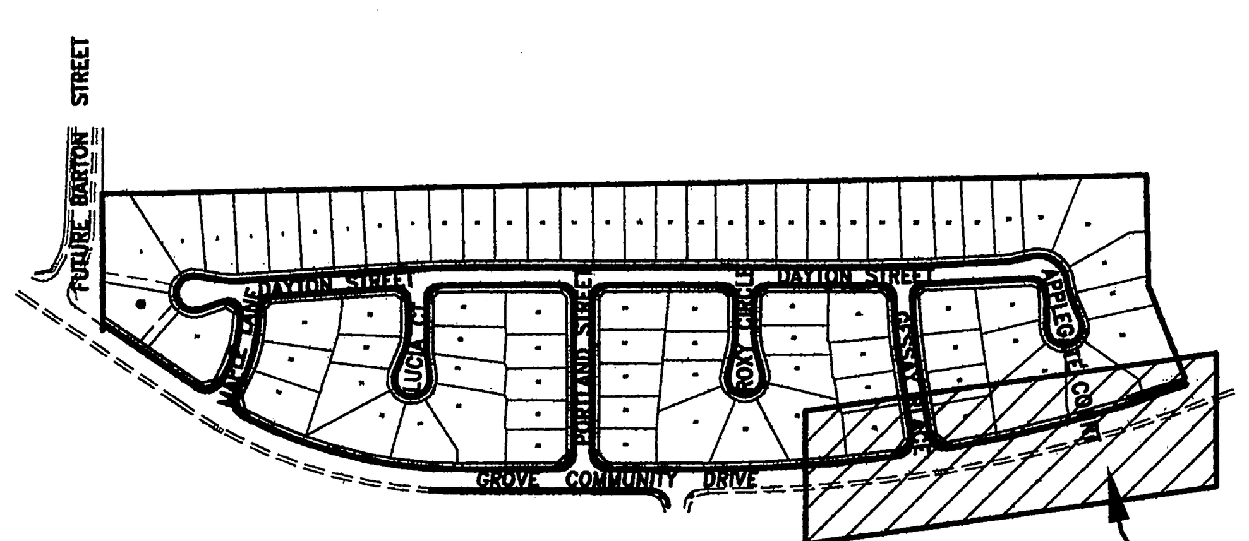
PLANT LEGEND

TRACT 22275-1

SYMBOL	BOTANICAL NAME / COMMON NAME	SIZE	SPACING	DETAIL/SHEET
TREES				
	LAGERSTROMIA I. 'CATAWBA' CRAPE MYRTLE	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
	ARBUTUS UNEDO STRAWBERRY TREE	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
	BAUHINIA VARIEGATA 'CANDIDA' WHITE ORCHID TREE	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
	PYRUS CALLERYANA 'ARISTOCRAT' ARISTROCRAT PEAR	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
	LOPHOSTEMON CONFERTUS BRISBANE BOX	15 GAL	PER PLAN	REFER TO DETAIL 'B' SHEET 8 OF 9
NOT SHOWN	ALL TREES LOCATED WITHIN 5' FROM ANY HARDSCAPE TO RECEIVE A DEEPROOT BARRIER			DETAIL 'D' SHEET 8 OF 9
SHRUBS				
	ACACIA REDOLENS PROSTRATE ACACIA	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	PLUMBAGO AURICULATA CAPE PLUMBAGO	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	PHORMIUM TENAX 'SEA JADE' NEW ZEALAND FLAX	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	MAHONIA LOMARIIFOLIA CHINESE HOLLY GRAPE	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	EUONYMUS JAPONICA EVERGREEN EUONYMUS	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	RHAPHIOLEPIS INDICA INDIAN HAWTHORN	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	CALLISTEMON VIMINALIS WEEPING BOTTLEBRUSH	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	CARISSA MACROCARPA 'FANCY' NATAL PLUM	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	CISTUS HYBRIDUS WHITE ROCKROSE	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9
	HEMEROCALLIS DAYLILY	1 GAL.	PER PLAN	DETAIL 'A' SHEET 8 OF 9

NOTE:
ALL TREES SHALL HAVE A SEPERATION OF 25' MINIMUM.
ALL TREES SHALL BE LOCATED A MINIMUM OF 30' FROM SIDE STREET B.C.R.
ALL TREES SHALL BE LOCATED A MINIMUM OF 50' FROM ARTERIAL (GROVE COMMUNITY DRIVE) B.C.R.

GROUND COVER				
	LANTANA MONTEVIDENSIS N.C.N.	1 GAL.	4' O.C.	DETAIL 'E' SHEET 8 OF 9
	TRACHELOSPERMU JASMINOIDES STAR JASMINE	ROOTED CUTTINGS	12" O.C.	DETAIL 'E' SHEET 8 OF 9
VINE				
▲	PARTHENOCISSUS TRICUSPIDATA BOSTON IVY	1 GAL.	10' O.C.	DETAIL 'F' SHEET 8 OF 9
MULCH				
NOT SHOWN	ALL PLANTER AREAS (EXCEPT TURF AND SLOPES) TO RECEIVE A 3" THICK LAYER OF "GORILLA HAIR" MULCH.			
	6" CONCRETE MOW CURB			DETAIL 'C' SHEET 8 OF 9



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0' 30' 60' 90'

BENCHMARK:
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10/6/03

REGISTERED LANDSCAPE ARCHITECT — RANDOLPH HLUBIK NO. 1512 — 7/31/05 — 9.29.03 — STATE OF CALIFORNIA

RHA LANDSCAPE ARCHITECTS PLANNERS, INC.
3612 MISSION INN AVE
RIVERSIDE, CALIFORNIA
92501
(909) 781-1930
LIC. #1512
FAX (909) 686-8091
JOB #03105
CONTACT: CAMILO ARELLANO

MARK | REVISIONS | APPR. | DATE
DESIGNED BY CA DRAWN BY DB CHECKED BY

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER	DH	10/6/03
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT		10/06/03

APPROVED BY
PUBLIC WORKS DIRECTOR
DATE 10/8/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
PLANTING PLAN
HORIZ. SCALE: 1" = 30' VERT. SCALE: 1" = 30'

ACCT. NO.
PLAN NO: **R-3071-L**
SHEET 7 OF 9
DRAWING 7

PRP03-0005 / PC-4389-R

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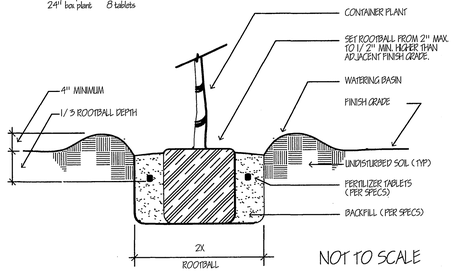
GENERAL PLANTING NOTES

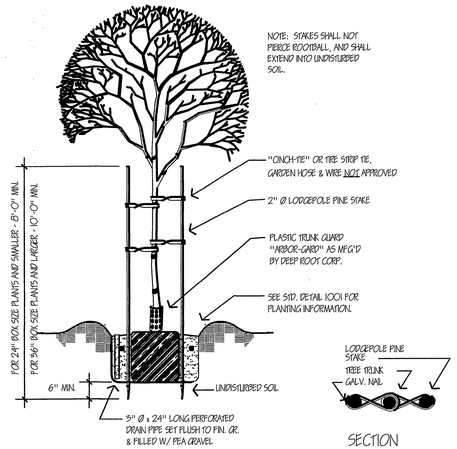
1) Contact the Park Projects Inspector at 351-6254 two working days (48 hours) prior to installing any plant material.
2) Trees planted in turf areas shall be maintained with a minimum 12" radius around the tree free of turf throughout the maintenance period.
3) Watering basins may be removed after the maintenance period.
4) For staking information as applicable, refer to Standard Detail 1002.
5) For guying information as applicable, refer to Standard Detail 1003.
6) For specification information, refer to City of Riverside Park and Recreation Department Standard Specifications, Section 02480 Planting.
7) Provide Fertilizer Tablets as follows:

1 gallon plant	2 tablets
5 gallon plant	3 tablets
15 gallon plant	5 tablets
24" box plant	8 tablets



NOT TO SCALE

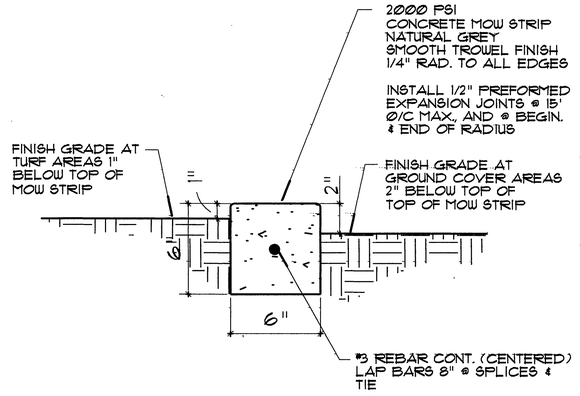
Approved	Date	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
BJ	08/28/09	**PLANTING DETAIL**	1001
Revised	Date		



SECTION

NOT TO SCALE

Approved	Date	Park and Recreation Department CITY OF RIVERSIDE	Detail No.
BJ	08/28/09	**DOUBLE STAKING DETAIL**	1002
Revised	Date		



A PLANTING DETAIL

B DOUBLE STAKE TREE

C CONCRETE MOW CURB

Linear Style Planting with DeepRoot Barriers

Determine the correct number of panels to be used. Depending upon the actual planting plan and the number of trees involved the length of linear barrier will vary, but as a general rule of thumb take the anticipated mature canopy diameter of the tree and add 2 feet (61cm). This will be the number of feet necessary for a Linear style planting application. (See chart below.)

A. Choose the barrier that best suits the application. Generally if a sidewalk, patio or driveway is to be protected, 18" (46cm) (LB 18-2) is sufficient depth with 12" (30cm) (LB 12-2) as an alternate choice for non-aggressive, deeper rooting trees. However for curb and gutter protection or more agressive roots 24" (61cm) (UB 24-2) is generally the better choice.

B. Dig the trench to the depth based upon the particular barrier chosen.

C. Install the barrier. When using DeepRoot Linear Barriers simply pull the appropriate number of panels out of the box (they come preassembled) and separate the joiner at the correct length. When installing DeepRoot Universal Barriers in a linear fashion you will need to join the appropriate number of panels together.

D. Next place the barrier in the trench with the vertical ribs facing toward the tree and align in a straight fashion. It is helpful to place the barrier against the hardscape. Use the hardscape as a guide and backfill against the barriers to promote a clean smooth fit to the hardscape. Be sure to keep the barrier's double top edge at least 1/2" (13mm) above grade to ensure roots do not grow over the top.

E. Plant the tree(s). The Linear style offers a more expansive rooting growth area, however adverse soil and drainage conditions may exist in the actual planting area. Take steps to ensure healthy growth of the tree at planting. Consult with a local Arborist for planting tips and recommendations.

F. If the tree(s) will be subject to maintenance work such as lawn mowing or weed trimming we strongly recommend the installation of ArborGard+ Tree Trunk Protectors which is placed around the base of young trees to protect them from damage by weed trimmers, lawn mowers and small rodents.

For additional information please consult the 16 page DeepRoot Product Selection and Installation Guidelines.

For information regarding distributors please call: 1 800 ILV ROOT (458.7668). For help with difficult drainage or other difficult installation questions please call DeepRoot Technical Support at: 1 800 ROOT TEX (766.8839).

For a simple formula to determine the quantity of panels required for a Linear application use:
Estimated Diameter of the Tree Canopy at Maturity + 2' (61cm) = Length of Barrier per Side.

As little as one side of the tree may need barrier for root direction as there may be no hardscape elsewhere requiring protection.

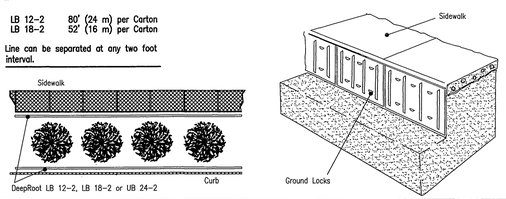
Note: Linear Barriers (LB 12-2 and LB 18-2) are packaged in 2' (61cm) long panels with pre-attached flexible joiners ready to pull out of the carton and install in one continuous line of up to:

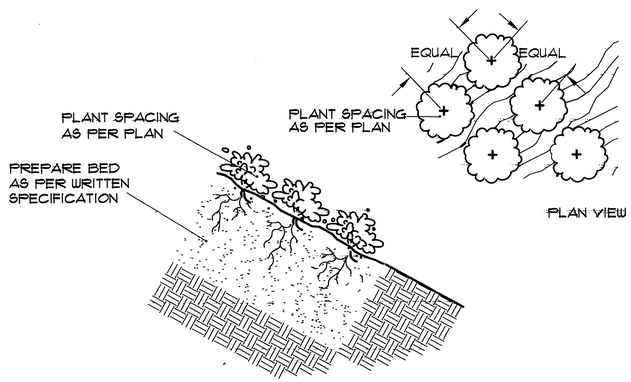
LB 12-2 80' (24 m) per Carton
LB 18-2 52' (16 m) per Carton

Line can be separated at any two foot interval.

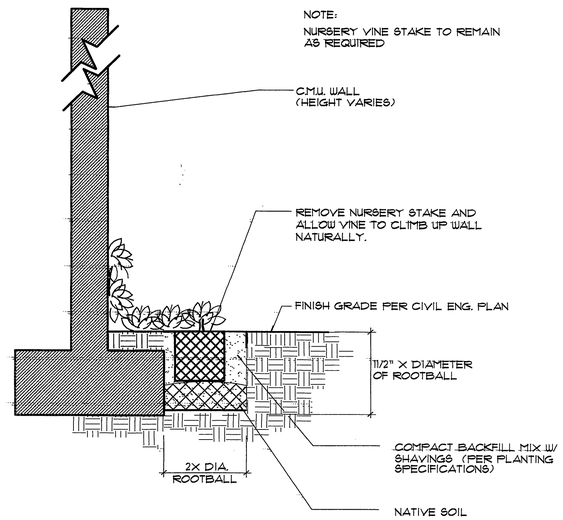
For One Side of Tree: Expected Tree Canopy at Maturity		Number of Feet of Linear Barrier (LB 12 or LB 18)	Optional Universal Barrier (UB) in number of Panels
12' (3.6m) Diameter	+2' (61cm) = 14' (4.2m)		7 Panels
18' (5.5m) Diameter	+2' (61cm) = 20' (6.1m)		10 Panels
24' (7.3m) Diameter	+2' (61cm) = 26' (7.9m)		13 Panels

DeepRoot LB 12-2, LB 18-2 or UB 24-2





PLAN VIEW



D DEEPROOT BARRIER

E GROUND COVERS ON SLOPE

F VINE ON WALL

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REGISTERED LANDSCAPE ARCHITECT — RANDOLPH HLUBIK, REGISTERED — 7/31/05 — 9.24.03 — STATE OF CALIFORNIA

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JOB #03105 CONTACT: CAMILO ARELLANO

MARK	REVISIONS	APPR.	DATE

DESIGNED BY CA DRAWN BY DB CHECKED BY

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER		
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT		10/14/03

APPROVED BY
PUBLIC WORKS DIRECTOR
DATE 10/15/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
PLANTING DETAILS
HORIZ. SCALE: NTS VERT. SCALE: NTS

ACCT. NO.
PLAN NO: R-3071-L
SHEET 8 OF 9
DRAWING: 8

PRP03-0005 / PC-4389-R

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SECTION 02480 - PLANTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Standard Specifications: The provisions of the Standard Specifications shall apply except as modified herein.

B. Reference Standards: American Association of Nurserymen Standards.

1.02 SCOPE: The Work of this Section shall consist of furnishing all labor, materials, equipment, appliances and services necessary for the execution and completion of all Planting Work as shown on the Plans and as described in the Specifications including, but not necessarily limited to, the following:
Soil preparation;
Fine grading;
Finish grading, as distinguished from fine grading;
Planting trees;
Guying and staking trees;
Planting shrubs and groundcover;
Hydroseeding turf;
Soil erosion control;
Maintenance;
Plant establishment;
Coordination with Work of other Sections;
Testing;
Clean-up;
Replacements, Repairs, Guarantees and Warranty Work.

1.03 RELATED WORK:
Irrigation 02441

1.04 SOILS TEST: Contractor shall notify the Park Projects Inspector upon completion of fine grading and prior to commencement of soil preparation work. Contractor shall obtain agronomic soils tests for all planting areas after completion of fine grading and prior to start of soil preparation work. Tests will be performed by an approved agronomic soils testing laboratory and will include a fertility and suitability analysis with written recommendations for soil preparation, planting backfill mix, auger hole requirements, and post plant fertilization program. The soils report recommendations will only take precedence over the minimum amendment and fertilizer application rates specified herein if and when the soils report recommendations exceed the specified minimums. Contractor shall allow a minimum two week period for the soils testing work commencing upon the Park Projects Inspector's acceptance of the fine grading work.

1.05 GUARANTEE: The guarantee requirements of the Standard Specifications are supplemented as follows as such requirements pertain to the tree planting portion of the Work. All trees installed under the Contract shall be guaranteed against any and all poor, inadequate or inferior materials and/or workmanship for a period of one (1) year following the date the Project Notice of Completion is filed with the County Recorder. During the guarantee period, any trees found to be dead, missing, or in poor condition shall be replaced by Contractor within ten (10) days of written notification. Park Projects Inspector shall be the sole judge as to the condition of the trees. Replacement shall be made in accordance with City standards. Material and labor involved in replacing trees shall be provided by Contractor at no additional cost to City.

1.06 INSPECTIONS: Inspections will be required. Contractor shall contact the Park Projects Inspector at least 48 hours (2 working days) in advance of an anticipated inspection. An inspection will be required at each of the steps listed below:

A. Fine Grade Prior to Commencement of Soil Preparation: Upon completion of fine grading and prior to commencement of soil preparation, for acceptance of fine grading work and taking of soils samples.

B. Finish Grade: Inspection of completed finish grading work following soil preparation work.

C. Plant Material: Inspection of plant materials upon delivery to the job site, but prior to planting.

D. Plant Locations: When container plants and/or bare root stock are spotted for planting, but before planting holes are excavated.

E. Completed Planting: When planting and all other indicated or specified work has been completed.

F. Chemical Applications: During application of pre-emergent chemical.

G. Start of Plant Establishment: At the start of the Plant Establishment Period.

H. End of the Plant Establishment: Prior to Final Acceptance of the Project, the project will be inspected for end of the Plant Establishment Period. Acceptance for maintenance, either by the Home Owner's Association or the City, will be confirmed in writing. Contractor shall remain responsible for maintenance until receipt of this written confirmation of acceptance of the Project for maintenance by others.

1.07 SUBMITTALS: The following written certifications are required to be submitted to the Park Projects Inspector upon delivery of the respective materials to the job site:
Total Quantity of commercial fertilizers, by type
Total Quantity of soil amendments and conditioners, by type
Total Quantity of seed, by type
Total Quantity of fiber-mulch
Total Quantity of iron sulphate

1.08 PLANT ESTABLISHMENT PERIOD: The length of the Plant Establishment Period shall be as specified in the 'Agreement for Installation of Landscape Improvements' as executed by the Developer for this project, but shall be not less than one year; regarding criteria to start, see also Subsections 3.13 Maintenance and Plant Establishment and 3.14 Start of Plant Establishment Period.

PART 2 - MATERIALS

2.01 GENERAL: All materials shall conform with Section 212 - Landscape and Irrigation Materials of the Standard Specifications except as modified herein.

2.02 FERTILIZER, SOIL AMENDMENTS AND CONDITIONERS: Add the following to Standard Specifications Section 212-1.2.3 Commercial Fertilizer:

A. Planting Tablets: Tightly compressed long-lasting, slow-release fertilizer tablets weighing 21 grams, with a potential acidity of not more than 5 percent by weight and having an analysis of 20-10-5 derived from the sources listed in the following guaranteed analysis:
GUARANTEED ANALYSIS

Total Nitrogen (N) . . . . 20 %
Derived from urea formaldehyde
7.0% water soluble nitrogen
13.0% water insoluble nitrogen
Available Phosphoric Acid (P2O5). . . . . 10 %
Derived from calcium phosphate
Soluble Potash (K20). . . . . 5 %
Combined Calcium (Ca). . . . . 2.6 %
Derived from calcium phosphates
Combined Sulfur (S). . . . . 1.6 %
Derived from ferrous and potassium sulfates
Iron (expressed as elemental Fe) . . . . 35 %
Derived from ferrous sulfate

B. Commercial fertilizer: Shall bear the manufacturer's guaranteed statement of analysis and shall meet the following minimum requirements: 16 % nitrogen, 6% phosphoric acid, and 8 % potash.

C. Organic Soil Amendment: Shall be type 1 organic soil amendment, wood based product, nitrogen stabilized, and free of foreign matter.

D. Soil Conditioners: Add to Standard Specifications, new Section as follows:

212-1.2.6 Inorganic Conditioners. Inorganic conditioners shall be agricultural grade gypsum, soil sulfur and iron sulfate. Iron sulphate shall be ferric sulphate or ferrous sulphate in pelleted or granular form containing not less than 18.5 % iron, expressed as metallic iron, and shall be registered as an agricultural mineral with the State Department of Food and Agriculture in compliance with Chapter 5 "Fertilizing Materials", of Division 7 of the Food and Agriculture Code of California, commencing at Section 14501.

2.03 HEADERS, STAKES AND TIES: Add the following to Standard Specifications Section 212-1.5 Headers, Stakes and Ties:

A. Headers: Standard Specifications Section 212-1.5.2 Headers and Stakes replace with the following to read:

"Headers shall be Concrete Headers/Mow Curbing - Concrete shall be 5 sack mix with a maximum slump test of four inches (4"). Provide sufficient concrete forming and stakes (maximum 3' o.c.) to provide continuous line without waving."

B. Tree Stakes: Shall be straight-grained lodgepole pine, or City approved equal. Stakes shall be free from knots, checks, split, or disfigurements. VIT Twist Braces are NOT ALLOWED.

C. Tree Ties: Shall be made from tire casing, 22" long by 3/4" wide, fastened to tree stake with two galvanized 5d roofing nails each.

2.04 N/A

2.05 JUTE NETTING: Jute netting shall be new and shall be of uniform, plain-weave, flame-retardant mesh. The mesh shall be dyed green and shall be made from unbleached single jute yarn. The yarn shall be of loosely twisted construction and shall not vary in thickness by more than one-half its normal diameter. Jute netting shall be furnished in rolled strips and shall meet the following requirements:
Width - 48 inches, with a tolerance of one inch wider or narrower.
Minimum 78 warp ends per width of roll.
Minimum 41 weft ends per yard of length.
Weight shall average 1.22 pounds per linear yard, with a tolerance of 5 percent heavier or lighter.

2.06 PLANTS: Add the following to Standard Specifications Section 212-1.4 Plants:

A. General: Add the following to sub-section 212-1.4.1 General: All plants shall be true to name, with at least one of each bundle or lot tagged with the name and size in accordance with the American Association of Nurserymen Standards. In all cases, botanical names shall take precedence over common names. All plants and planting materials shall meet or exceed the specifications of Federal, State, and County Laws requiring inspection for plant disease and insect control.

B. Quality and Size:
1. Quality: All plant material shall comply with the definition for number one nursery stock per the current edition of "Horticultural Standards" as adopted by the American Association of Nurserymen.
2. Size: Add the following to Standard Specifications Sections 212-1.4.2 Trees and 212.1.4.3 Shrubs:
a) All container plants supplied by Contractor shall be of the specified standard height and diameter set by the American Standard for Nursery Stock. The height of the trees shall be measured from the root crown to the last division of the terminal leader and the diameter shall be measured six (6) inches above the crown roots.
b) All palm trees shall be of a minimum overall height of 8 to 12 feet as measured from the crown of the rootball to the tips of the fronds, or four feet of brown trunk whichever is greater.

c) All container grown plants shall be the size(s) as noted on the approved plans, but in no case less than a minimum 15 gallon container size, with minimum caliper and height in accordance with the American Association of Nurseryman standards for container plants. Where substitution of bare root stock is approved by the Street Tree Inspector, bare root stock shall conform to the American Nurseryman's Association standards. Minimum caliper shall be two (2) inch diameter and minimum height shall be twelve (12) feet.

C. Bare Root Stock: Shall conform to the American Nurseryman's Association standards. Minimum caliper shall be two (2) inch diameter and minimum height shall be twelve (12) feet.

D. Cuttings: Modify Standard Specifications Section 212-1.4.6 Cuttings to read: All cuttings used on the project shall be fully rooted cuttings unless otherwise approved in writing by the Park Projects Inspector.

2.07 MULCH:

A. Nitrolized Shavings: Shall conform with Standard Specifications Section 212-1.2.5 (a) Type I Mulch.

B. Tree Mulch: Shall be a ground wood product as produced through a wood chipper, and shall consist of twigs and branches with pieces of a maximum size of 2" diameter by 4" long, free of seeds, trash and debris and other inert non-organic materials.

2.08 N/A

PART 3 - EXECUTION

3.01 GENERAL: All Work shall conform with Section 308 LANDSCAPE AND IRRIGATION INSTALLATION of the Standard Specification, except as modified herein.

At Contractor's option, subject to the Park Project Inspector's acceptance of the material available and the appropriateness of the planting season, bare root stock may be substituted for the required 15 gallon and 24" box tree species if commercially available as bare root plantings and provided the corresponding minimum caliper and height requirements of Subsection 2.06 PLANTS, Subparagraph C. Bare Root Stock above are met, all at no change in contract price.

3.02 FINE GRADING: Fine grading, as specified under this Subsection, is a separate operation from finish grading as specified under Subsection 3.05 below. Fine Grading Work is to commence upon completion of all trenching and backfill operations, and prior to soil preparation.

Upon completion of Fine Grading Work all areas shall slope to drain without water pockets or irregularities and shall conform to the intent of all Plans and Specifications after thorough settlement and compaction of the soil. Fine grading should allow for Soil Preparation Work as specified, such that finish grades shall meet the elevations indicated on the Plans. Tolerance for fine grading is 1/4 inch, plus or minus. Any corrections to the Grading Work required to obtain proper drainage and to bring it into conformance with the intent of the Plans and Specifications and City codes shall be performed by Contractor at no additional cost to City.

3.03 WEED CONTROL MEASURES: Upon completion of all fine grading work, and prior to soil preparation, perform weed control measures as follows:
1. Irrigate all areas designated to be planted for a minimum of 10 minutes per setting, two settings per day for seven days to germinate all weed seed possible.
2. Apply a contact weed killer and allow sufficient time to obtain complete kill of all weeds germinated.
3. Repeat step one above.
4. Repeat step two above.

3.04 SOIL PREPARATION: Add the following to Standard Specifications Section 308-2.3 Topsoil Preparation and Conditioning:

A. Work Sequence: All fine grading, landscape mounding, and weed control measures shall be completed prior to soil preparation. Soil Preparation Work shall not commence until the agronomic soils test has been completed. Should 30 calendar days elapse between completion of soil preparation and commencement of planting, all areas shall be prepared again.

B. Excluded Areas: Planting areas with slopes 3:1 and steeper shall not be soil prepared. In lieu of soil preparation, such slopes will require fertilizer tablets for all plantings as specified below.

C. Soil Preparation: In all planting areas with gradients less than 3:1, areas to be soil prepared shall first be cross ripped to a minimum depth of 6" with tractor tines spaced at maximum 18" on center. Following cross-rip operations, a layer of soil amendments shall be spread and rototilled into the soil to a minimum depth of 4 inches, or as recommended by the soils report, so that the soil shall be loose, friable, and free from rocks, sticks, and other objects undesirable to planting.

D. Amendment Application Rates: The following soil amendments shall be added per 1,000 square feet to all planting areas with gradients less than 3:1 (agronomic soil test recommendations shall take precedence where these minimum amounts are exceeded):
1. 6 cubic yards Type I organic soil amendment.
2. 15 pounds commercial fertilizer.
3. 100 pounds gypsum.
4. Soil sulfur per soils report.

3.05 FINISH GRADING: Contractor shall finish grade all planting areas, filling as needed or removing surplus dirt, raking to remove all rocks and debris over 1 inch in diameter, and floating to a smooth uniform grade. All areas shall slope to drain. Flow lines shall be established to roads, curbs, drainage swales and inlets, and/or sidewalks as shown on the Plans and as directed. All fill material placed within the top 12" from finish grade elevations in all planting areas shall be topsoil.

All landscape areas shall be finish graded (as distinguished from fine grading specified above) to "dress out", maintain, and/or re-establish finish grades and flow lines as approved prior to amending the soil. Contractor shall call for inspection upon completion of finish grading work. Contractor shall not proceed with planting work until finish grades have been inspected and accepted by the Park Projects Inspector.

3.06 EROSION CONTROL: Add new Section to the Standard Specifications:

"308-4.9.6 Jute Netting. All slopes areas exceeding 3:1 shall receive jute netting. Netting shall also be provided during the Plant Establishment Period, when and as directed by the Park Projects Inspector, along flow lines and other locations where erosion is evident. Jute netting shall be installed loosely, up and down the slope. The installed netting shall fit the soil surface contour and shall be held in place by 9-inch long, 11-gage (minimum) steel wire staples driven vertically into the soil at approximately 24-inch spacing. Jute netting strips shall overlap along the sides at least 6 inches. Ends of strips shall be buried into the soil at least 6 inches. Lap all ends of rolls a minimum of 24"."

3.07 INSPECTION OF CONTAINER PLANTS: The root condition of plants furnished in containers will be checked by the Park Projects Inspector by removal of earth from the roots of not less than two plants nor more than 2 % of the total number of plants of each species or variety from a single source and proposed for use in the Work. When container-grown plants are from several different sources, the roots of not less than two plants of each species or variety from each source may be checked by the Park Projects Inspector at the Inspector's option. The selection of plants to be checked will be made by the Park Projects Inspector.

Care shall be exercised to avoid rendering plants unsuitable for planting by virtue of this inspection. However, all plants rendered unsuitable for planting shall be considered as samples, and replacements shall be provided at no additional cost to City. In case the sample plants are found to be defective, the entire lot or lots of plants represented by the defective samples will be rejected.

3.08 PLANTING BACKFILL:

A. Mixing: All backfill materials shall be bulk mixed, not individually mixed at each plant pit.

B. Proportions: Backfill for planting pits shall be enriched using the following blend per cubic yard (agronomic soil test recommendations shall be reviewed prior to soil mixing):
1. Container Plants:
60% top soil 3 lbs. gypsum
40% Type I Organic Amendment 2 lbs. iron sulphate
2 lbs. commercial fertilizer
2. Bare Root Stock:
10% wood shavings 90 % top soil
fertilizer and soil conditioners as specified for container plants.

3.09 PLANTING:

A. Tree and Shrub Planting: Add the following to the Standard Specification Section 308-4.5 Tree and Shrub Planting:
1. Soil surrounding planting pit shall be in a friable condition and moist to a depth of 8".
2. Backfill using specified soil mix to within 8" of finish grade. At this depth, place the plant fertilizer tablets Agriform 20-10-5, 21 grams each, or City approved equal. A minimum of 1 tablet for 1 gallon, 3 tablets for 5 gallons, 5 tablets for 15 gallons, and 8 tablets for a 24" box. Complete backfilling to finish grade.
3. Trees (other than relocated palms) shall be planted at such a depth that the crown roots bear the same relative position to finish grade as the crown roots did in the soils where the trees were grown. Backfill after planting shall be compacted carefully into place without injuring the roots of the tree or breaking up the ball of earth surrounding the roots.

B. Groundcover and Vine Planting: Add the following to Standard Specifications Section 308-4.7 Groundcover and Vine Planting:
1. On slopes exceeding 3:1 ratio, apply 5 gram Agriform tablets, one per plant in lieu of soil preparation work.
2. Prepare the soil in all planting areas (except where slopes exceed 3:1) by applying 1.5 cubic yards of Nitrolized Shavings and 5 lbs. of the specified commercial fertilizer per 1,000 square feet. Repeat fertilization at 30 day intervals throughout the duration of the Contract up to 4 applications, after which decrease frequency to once every 90 days.
3. All planting areas, areas to receive Tree-Mulch and bare dirt areas shall be treated with a pre-emergent chemical (subject to approval by the Park Projects Inspector prior to application). Chemicals shall be applied by a licensed Pest Control Agent. This treatment shall be applied at the following times during the Contract: a) before planting, b) at beginning of Plant Establishment Period, and c) at end of Plant Establishment Period. The Park Projects Inspector, (909) 351-6254, shall be given a minimum of 48 hours (2 working days) notice prior to each application. No chemicals shall be applied other than in the presence of the Inspector.
4. All areas designated to receive Tree-Mulch shall have mulch applied and spread to provide a uniform thickness of not less than 3" of mulch, and shall be neat and clean, free of trash.

3.10 TREE STAKING: Amend the Standard Specifications Section 308-4.6.1 Method 'A' Tree Staking and 308.4.6.2 Method 'B' Tree Staking to read: Stake trees in accordance with the Park and Recreation Department's standard detail.
3.11 N/A

3.12 WATERING: Add the following to Standard Specifications Section 308-4.9.5 Watering:

A. Responsibility: It shall be Contractor's responsibility to maintain a balanced watering program to ensure proper growth until Final Acceptance of the Work.

B. Initial Watering: Immediately after planting, apply water to each plant. Apply water in a moderate stream in the planting hole until the material about the roots is completely saturated from the bottom of the hole to the top of the ground.

C. Ongoing Watering: Apply water in sufficient quantities and as often as seasonal conditions require to keep the planted areas moist at all times, well below the root system of plants.

D. Irrigation:
1. Contractor shall properly and completely maintain the irrigation system. A balanced water program shall be maintained to ensure proper germination and growth until Final Acceptance of the Work. Plants which cannot be watered sufficiently with the irrigation system shall be watered by means of a hose.
2. All controllers are to have each station individually adjusted on a weekly basis. System shall be set considering the application rate each area is capable of receiving. The system shall operate on short intervals, with the cycle repeating at a later time to reduce runoff.

3.13 MAINTENANCE AND PLANT ESTABLISHMENT: Amend the first sentence of Standard Specifications Section 308-6 MAINTENANCE AND PLANT ESTABLISHMENT to read: " Contractor shall maintain all areas within the Work Limits of this Contract on a continuous basis...until Final Acceptance".

3.14 START OF PLANT ESTABLISHMENT: Add the following to Standard Specifications Section 308-6 MAINTENANCE AND PLANT ESTABLISHMENT:

A. Criteria for Start of Plant Establishment Period:
1. The Plant Establishment Period shall not start until all elements of the Project that impact the landscape are completed in accordance with the Contract Documents. Projects will not be segmented into phases.
2. Permanent power to remote controllers shall be established.
3. Written acceptance of the Park Projects Inspector must be obtained to start the Plant Establishment Period.
4. If the project maintenance fails to continuously meet standards required, the Plant Establishment Period "day count" will be suspended and will not recommence until Contractor has corrected all deficiencies.

3.15 MAINTENANCE TASKS: Add the following to Standard Specifications Section 308-6 MAINTENANCE AND PLANT ESTABLISHMENT:

A. General: During the contract period provide all watering, weeding, mowing, fertilizing and cultivation and spraying necessary to keep the plants and turf in a healthy growing condition and to keep the planted areas neat, edged, and attractive. All shrubs planted by Contractor shall be pinched and pruned as necessary to encourage new growth and to eliminate rank sucker growth. Old wilted flowers and dead foliage shall be immediately pinched or cut off. Do not prune trees without written approval of the Park Projects Inspector.

B. Iron Chlorosis: After planting and during the Plant Establishment Period, in the event that any plantings exhibit iron chlorosis symptoms, apply FE 138 Geigy or equivalent at manufacturer's recommended rates.

C. Replacement Plantings: During the Plant Establishment Period, should the appearance of any planting installed by Contractor indicate weakness, that plant shall be replaced immediately with a new, healthy plant. At the end of the Plant Establishment Period, all plant materials shall be in a healthy, growing condition and spaced as indicated on the plans.

D. Fertilization: Contractor shall apply commercial fertilizer to all groundcover areas at a rate of 5 pounds per 1,000 square feet, at 30-day intervals, for 3 applications as a minimum, above and beyond the original soil preparation application.

E. Planting Establishment: All planting areas that do not show a prompt establishment of plant material, and areas where plant material is missing, shall be replanted at 10-day intervals until the plant material is established. If a good rate of growth has not been demonstrated within 30 days of first planting/hydroseeding, Contractor shall be responsible to determine the appropriate horticultural practices necessary to obtain good growth. Contractor shall obtain agronomic soils testing of all areas not showing good growth and shall provide copies of the test results to the Park Projects Inspector to verify the appropriateness of all maintenance work performed. If additional soil amendments are needed, up to a maximum 25 % beyond the application rate specified, such amendments shall be provided by Contractor at no additional cost to City.

F. Grading and Drainage: During the Plant Establishment Period all flow lines shall be maintained to allow for free flow of surface water. Displaced material which interferes with drainage shall be removed and placed as directed. Low spots and pockets shall be graded to drain properly. Jute netting shall be installed at flow lines and other locations where erosion is evident, when directed by the Park Projects Inspector.
1. Damage to planting areas shall be repaired immediately and throughout the Plant Establishment Period. Depressions caused by vehicles, bicycles, or foot traffic shall be filled and leveled. Replant damaged areas.
2. All paved areas shall be washed and maintained in a neat and clean condition at all times.
3. All subsurface drains and inlets shall be periodically cleared of debris, leaves and trash and flushed with clear water to avoid build up of silt and debris.
4. Debris and trash shall be removed from the site daily.

G. Disease and Pest Control: Throughout the Plant Establishment Period, all plants shall be maintained in a disease and pest free condition. A licensed pest control operator shall be retained by Contractor to recommend and apply all pesticides, herbicides, and fungicides. Exterminate gophers, moles, and all other rodents, and repair damage.

3.16 END OF PLANT ESTABLISHMENT PERIOD: Add the following to Standard Specification Section 308-6 MAINTENANCE AND PLANT ESTABLISHMENT:

A. Request for Inspection: When Contractor believes the Plant Establishment Period is complete and the Project is ready for Final Acceptance, Contractor shall request inspection of the Project. The Park Projects Inspector will inspect the Project for Final Acceptance. Deficiencies noted during inspection shall extend the Plant Establishment Period until all are corrected.

B. Established Plantings: All planting areas shall show a good rate of growth and shall be well established "filled in" plantings free of voids. Bare areas will be unacceptable. Contractor shall provide sod or plantings from flats as necessary to fill in all bare areas. Such plantings shall be planted a minimum of 10 days prior to the end of the Plant Establishment Period and shall have roots "knit-in" to the native soil.

C. Written Acceptance: Final Acceptance and assumption of maintenance responsibilities by others shall occur only upon the written acceptance of the Project for maintenance by others.

3.17 CLEAN UP: Upon completion of the Work, Contractor shall smooth all ground surfaces; remove excess materials, rubbish, debris, etc.; sweep adjacent streets, curbs, gutters; wash down all walkways, and trails; and remove construction equipment from the premises.

END OF SECTION

BJ/02480.MAS
07/15/98

BENCHMARK:
CITY OF RIVERSIDE BENCHMARK ?.
?
?
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ELEVATION = ?

DIG ALERT
DIAL TOLL FREE
1-800-422-4133
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

10/3/03

REGISTERED LANDSCAPE ARCHITECT
RANDOLPH HLUBIK NO. 1512
7/31/05
9.29.03
STATE OF CALIFORNIA

RHA LANDSCAPE ARCHITECTS PLANNERS, INC.
JOB #03105
3612 MISSION INN AVE
RIVERSIDE, CALIFORNIA
92501
(909) 781-1930
LIC. #1512
FAX (909) 686-8091
CONTACT: CAMILO ARELLANO

MARK	REVISIONS	APPR.	DATE

DESIGNED BY CA DRAWN BY DB CHECKED BY

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

APPROVED BY	BY	DATE
DEPUTY P.W. DIRECTOR		
PRINCIPAL ENGINEER	DA	10/6/03
CHIEF P.W. INSPECTOR		
STREET SERVICES		
SURVEYOR		
TRAFFIC DIVISION		
PARKS DEPARTMENT		10/06/03

APPROVED BY
PUBLIC WORKS DIRECTOR
DATE 10/8/03

LANDSCAPE IMPROVEMENT PLANS
TRACT 30718 LMD
PLANNING AREA 4A\4B
PLANTING SPECIFICATIONS
HORIZ. SCALE: NTS VERT. SCALE: NTS

ACCT. NO.
PLAN NO:
R-3071-L
SHEET 9 OF 9
DRAWING: 9

PRP03-0005 / PC-4389-R

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